



Executive Summary

The State of West Virginia is blessed with great natural beauty and a rugged landscape that enticed the explorer, the pioneer, and the settler to travel through and settle within its majestic countryside. Prior to the advent of modern earth-moving equipment and construction technology, streams and rivers and their narrow floodplains defined the pathways and wagon trails throughout West Virginia. With the exception of recent interstate highways that crisscross numerous watersheds within the State, most U.S. and State highways and Class I railroads extend the length of every major river valley in the State. The historic use of the State's rivers for commercial navigation further reinforced this floodplain-centered transportation system.

Early villages and towns sprang up at the confluence of streams and rivers to take advantage of those transportation opportunities and the nutrient-rich floodplain. Unknowingly, these early settlers initiated patterns of movement and development that would place countless thousands of West Virginians in harms way. As abundant natural resources were discovered and exploited, the economic fortunes of the State improved and floodplain communities increased in size and density to accommodate the inflow of new workers and their families. Thousands of acres of forestland were cleared for resource development. The newly constructed railroads and massive resource processing facilities further crowded the floodplains. Excess runoff generated by the combination of expanding communities and resources development quickly overwhelmed the channel capacity of the resident streams and rivers leading to flooding, losses of life and property damages.

Historically, flooding has affected each of the 32 major watersheds and 55 counties within the State. Federally declared flood disasters are far too common in the Mountain State. Thousands of West Virginians have suffered through damaged homes and businesses, lost loved ones, and deteriorating communities. Addressing a problem of this magnitude and complexity necessitated initiation of a strategic planning process that would be comprehensive in scope, sensitive to the needs of the stakeholders and their environment and well coordinated. The Statewide Flood Protection Plan is a result of that process.

How Did the Statewide Flood Protection Plan Get Started?

After years of planning and coordinating the development of isolated flood protection projects with various Federal and State agencies, the West Virginia Soil Conservation Agency (since renamed the West Virginia Conservation Agency), took the initiative to chart a new course of flood damage reduction and floodplain management in the State. Encouraged and supported by the Governor's office and legislative leadership, the Conservation Agency presented the need for a comprehensive statewide flood protection plan to Senator Byrd. The Senator responded in 1998 by providing funds to the U.S. Army Corps of Engineers for the joint development of a statewide plan for flood protection with the Conservation Agency. Showing the level of commitment needed for this effort to be successful, the Governor's office and the Legislature responded with funding to match the Federal contribution.

In 1999, the Conservation Agency, the Corps of Engineers and the Natural Resources Conservation Service created a framework for the statewide plan that specified the need for a joint Task Force. A dedicated group that could bring to bear the technical and policy expertise and experience needed to tackle the complex flooding issues in the State.

That Task Force met for the first time in September 2000. Composed of 20 Federal, State, regional and local agencies and quasi-public organizations, the Task Force dedicated staff, data, and other resources to the development of a comprehensive strategic plan that would reduce flood damages and save lives. Representatives from the Governor and Senator Byrd's offices attended the Task Force meetings.

What are the Goals and Objectives of the Statewide Plan?

The Plan is a vision for the future of West Virginia, spelling out both long-term and short-term goals, strategies and implementation schedules. Patience and dedication will be required to successfully reach the established goals. The plan addresses six specific goals:

Reduce the unnecessary loss of lives due to flooding.

Reduce private and public property damages due to flooding.

Develop technical and administrative tools to manage flood loss reduction and floodplain management.

Promote technical and legislative tools that will reduce excessive runoff from land-conversion activities

Reduce personal and economic loss due to flooding while supporting State economic growth.

Protect the State's waterways and floodplain environments.

Objectives for each of the goals were formulated that would challenge the members of the Task Force and the agency representatives tasked to create the Plan.

How extensive is the flooding problem?

Floods have been documented in West Virginia since the earliest settlements in the 1800's. More recently, between 1996 and 2004 there have been 16 Federal disaster declarations in the State involving flooding. All 55 counties have been included in at least one of those floods. The total FEMA cost during that time span is more than \$500 million.

Floods also result in a loss of life. Between 1960 and 1996, there were 252 deaths from floods or flash floods in West Virginia – more than any other state except Texas with 619 and California with 258. National statistics indicate that as many as 59% of flooding victims drown in their vehicles.

What Other Issues were raised during the study?

The task force convened a series of public workshops throughout the State to enlist the help of West Virginians in determining what the flooding problems were and what might be solutions to the problems. Information collected in those meetings helped form the foundation of the planning efforts of the Task Force.

After the meetings were completed, the primary issues were gathered into 12 categories. Those categories are discussed below:

a. Floodplain Management

The enforcement of floodplain regulations required by the National Floodplain Insurance Program has been sporadic in West Virginia, resulting in unwise development decisions within the State's floodplain.

b. Flood Warnings

Flood warnings are transmitted in a manner that is not understandable by many people; the warnings are not considered to be reliable and many times are not timely.

d. Floodplain Mapping

Existing floodplain maps are insufficient to make accurate determinations of flood hazard for new floodplain construction.

c. Flood-Damage Assessment

Information on potential flood damages in the State is not easily accessible to Federal, State or local agencies or to the public.

e. Building Codes, Permitting and Enforcement

West Virginia needs to maintain enforcement and updates to the building codes that address floodplain construction and drainage issues that can impact downstream flooding and flood damages. Citizens need information about Federal and State regulatory permit requirements when working in the State's streams.

f. Environmental Impacts of Flooding

Construction in the floodways and floodplains can have significant environmental impacts on both the stream ecology and people living in the floodplain. Increasing amounts of stormwater runoff from development in the State's watersheds are destroying stream channels, the aquatic ecosystems and creating flood damages. Placement of materials and structures in the floodplain that become floating debris during floods causes further damages downstream.

g. Stream Crossings and Access Roads

Incorrectly designed or constructed metal and concrete box culverts, bridges and other stream crossings may be easily blocked by debris and therefore contribute to local flooding. Regulation of the design, installation and maintenance of culverts and other stream crossings is often inadequate or non-existent.

h. Dredging

The public has long perceived that dredging of streams is an acceptable and effective means of reducing the negative effects of floods. The continued costs, actual impacts and marginal effectiveness of dredging streams to reduce the effects of major floods are generally unknown or misunderstood.

i. Resource Extraction

Mining, forestry operations, along with other resource extraction industries were frequently perceived as being one of the causitive factors in flooding. The Department of Environmental Protection was tasked by the Governor to conduct a study of the impacts of mining and timber harvesting on flooding in two watersheds in southern West Virginia. The conclusions of this study are included in Appendix I.

j. Stormwater Management

Excessive uncontrolled and unregulated stormwater runoff volumes create nuisance flooding in many areas of the State and the cumulative effect of these incremental runoff volumes contribute to regional flooding events within the State.

k. Education

The knowledge of floodplain management professionals, political leaders and the public is inadequate regarding the causes of flooding, methods of reducing flood damages and floodplain ordinances.

l. Existing Flood-Prone Structures and Facilities

A substantial number of structures and facilities were constructed within the designated 100-year frequency floodplain in West Virginia prior to existence of the National Flood Insurance Program and many remain subject to annual flood damages.

Are there existing programs in Federal and State government that offer solutions to these problems?

The short answer is: yes. During the creation of the Plan, Task Force members brought a host of Federal, State, and local flood protection programs to the table. Several flood protection projects had been constructed through those programs. Many of these programs provide viable solutions

to flood damages and other issues, but they require support from local governments, they require investments of capital funds and dedicated maintenance for the life of the project. Many more projects proposed through those programs had never left the pages of the reports that spoke of their positive attributes. For lack of support, funds or justification many of those projects remained only words, drawings and numbers.

What are the recommendations of the Statewide Plan?

After analysis of the basic flooding problem, consideration of the issues raised by citizens of West Virginia, and application of existing flood protection programs and the experience of the Task Force members, the following recommendations were developed.

a. Floodplain Management

Increase resources in the West Virginia Office of Emergency Services to support local floodplain managers statewide. Require owners of all new structures to obtain a permit certifying whether or not the structures are in the floodplain. Improve enforcement of floodplain management ordinances.

b. Flood Warning System

Improve and expand the network of existing rain and stream gages in the State and connect those instruments to a proposed statewide flood warning system. This system would enable the National Weather Service to issue credible and reliable flood warnings. Provide markers along roads and at stream crossings subject to frequent inundation warning motorists of possible hazards at these locations.

c. Floodplain Mapping

Update floodplain mapping to more precisely delineate floodplain areas and create more detailed hydrographic networks to improve flow models and flood risk assessment.

d. Flood Damage Assessment

Designate a single agency or point of contact where flood damage data from Federal and State resources could be stored. Develop a system that integrates the capability of Geographic Information Systems (GIS) with flood damage data so that damage information could be used as the basis for flood protection planning.

e. Building Codes, Permitting and Enforcement

Continue to support and adopt updates of International Building Code, which covers residential building, plumbing, mechanical, fuel-gas and private sewage disposal requirements and meets minimal flood-resistant design standards. Provide education and technical assistance to the public on the regulatory permit process.

f. Environmental Impacts of Flooding

Enact legislation that recognizes the attributes and hazards of the State's floodplains and the needs for stricter enforcement of floodplain ordinances. The legislation should declare floodway zones to be off-limits to new development (with some exceptions), and encourage Federal agencies to evaluate all proposed projects for effects on the State's floodplains. Legislate stricter enforcement of regulations for anchoring floatable materials and structures in the floodway and

flood fringe. Convene a “Stream Summit” to formulate a standard classification of stream quality in the State. Enact legislation that supports local regulation of stormwater runoff volume. Enact guidelines for the emergency removal of stream debris to avoid long-term environmental damage. Fund studies for identification of stable stream reaches that require protection from development.

g. Stream Crossings and Access Roads

Establish guidelines for the sizing, installation and maintenance of culverts, drainage structures and stream or river crossings. Identify ownership of abandoned stream crossings and move to demolish unused crossings.

h. Dredging

The practice of local stream dredging to reduce the damages associated with large regional floods should be terminated. Channel modifications projects (which includes some dredging) where economically justified and environmentally sound should be supported to reduce flood damages. Allocate funds for stream restoration projects that can reduce flood damages and return the natural functions of damaged streams and ecosystems.

i. Resource Extraction

The Task Force supports the recommendations of the study conducted by WVDEP regarding mining. In addition, the Task Force recommends the WV Division of Forestry accelerate revisions to Best Management Practices to reduce the impacts of forestry operations on flooding and develop BMPs on areas severely burned by wildfire.

j. Stormwater Management

The Task Force recommends that all counties implement a stormwater ordinance to control the quantity and quality of stormwater and to guide the development and implementation of a stormwater management plan. It is recommended that a State agency inspect stormwater facilities and serve as a back up for local inspection and enforcement of regulations on design, installation, operation and maintenance of these facilities. It is also recommended that special stormwater regulations be prepared for karst areas in West Virginia.

k. Education

Encourage State, county and local officials to take the Federal Emergency Management Agency independent study course related to flooding, flood mitigation and floodplain management. Encourage education outlets to develop classes and curriculums that address floodplain and flood issues. Provide visible markers to identify for the public the Base Flood Elevation level.

l. Existing Flood-Prone Structures and Facilities

Evaluate the major watersheds in the State to identify opportunities to construct upstream retention facilities for flood control and water supply. Evaluate the existing municipalities in the State to identify opportunities for protection in place of those communities serving as the economic and political centers of their respective counties. Establish a voluntary program of permanent acquisition for structures within the designated floodways and a voluntary program of floodproofing and relocations to address existing structures in the flood fringe areas.

When can these solutions be implemented?

The Statewide Plan includes a number of recommendations that are not specified in this abbreviated executive summary. A complete list of the recommendations can be found in Chapter 6 of the Plan. Many of the recommendations listed above would require administrative or legislative actions by the State, county or municipal governments. There are several recommendations for capital construction that would require annual allocation of matching funds by the Federal government and the State through existing flood protection programs. The Task Force purposefully avoided recommending creation of entirely new flood protection programs that could require months of Congressional and Legislature debate at the expense of those in need.

Recommended changes in the State Code could be accomplished annually through the State Legislature. Modifications to county and municipal ordinances could be accomplished through County Commissions and Town/City Councils with required readings and public meetings.

Among the capital construction recommendations requiring allocation of matching funds is the installation of a statewide flood warning system. Given the existence of standing Federal authorities and funding for small flood protection projects, this system could be initiated as early as the fall of 2005. Several recommendations may require the addition to or restructuring of staff in State agencies. These staff proposals would require approval by the Governor and the Legislature along with funding to support the additional positions.

Fully implementing the capital construction and program recommendations included in this plan could cost hundreds of millions of dollars. Some of those required funds could be allocated through existing Federal programs for flood protection, but certain matching funds will need to be budgeted through the State Legislature. Fortunately, the flood-damage reduction benefits that will be generated as a result of those expenditures are cumulative in nature. Therefore, a sustained, modest annual program of expenditures well within the budget capabilities of the Federal and State governments would be effective in reducing losses of life and flood damages.

Allocation of public funds to reduce losses of life and property damages associated with annual floods must certainly be accomplished with consideration of other pressing State and national needs. National security, economic growth and employment opportunities, employment security, education, nutrition, environment, transportation, housing, and many other issues face both the Congress and the State Legislature. Allocating funds and resources to address these various issues in a responsible manner must be accomplished with a reasonable promise of some positive outcome or benefit. The recommendations outlined in this Statewide Flood Protection Plan will each yield positive benefits in reducing the reality and threat of future losses of life and property damages associated with flooding.

The Tyler & Moench framework

—

the basics

Ira Feldman
October 17, 2016

Tyler & Moench

- A framework for climate “resilience”
 - reviews concepts and theories in a range of diverse fields to illustrate how the general notion of climate resilience can be developed into an operational framework for planning practitioners.
 - operationalizes these concepts through structured and iterative shared learning approaches that allow local planners to define these factors in their own context, in order to develop practical strategies for local action.

Tyler & Moench

- Instead of focusing on discrete measures to adapt to specific perceived future climate risks, Tyler & Moench suggest it may be more effective to consider the problem as one of **enhancing resilience**.
 - The IPCC defines **resilience** as ‘the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organization, and the capacity to adapt to stress and change.’

Tyler & Moench

- Several authors have described the varied and contradictory definitions of resilience, and the absence of a framework for operationalizing the concept.
 - This definition is broadly consistent with definitions from ecological sciences and from disaster risk reduction (UNISDR, 2012).
 - The metaphorical extension of the term ‘resilience’, from its origins in metallurgy and engineering, has been applied to psychology and community development as well as disaster risk reduction.

Tyler & Moench

- **Increasing the inherent capacity of complex systems to manage a range of stresses and shocks**, through experience or strategic preparation, better enables such systems to deal with surprise.
 - Vulnerability to climate change occurs when fragile, inflexible **systems** and/or marginalized or low-capacity **agents** are exposed to increased climate hazards, and their ability to respond or shift strategies is limited by constraining institutions.
 - **Resilience** is high where **robust and flexible systems** can be accessed by high-capacity agents and where that access is enabled by supportive institutions.

Tyler & Moench

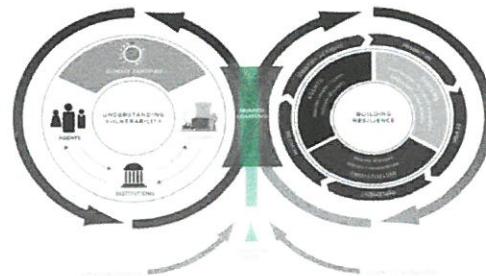
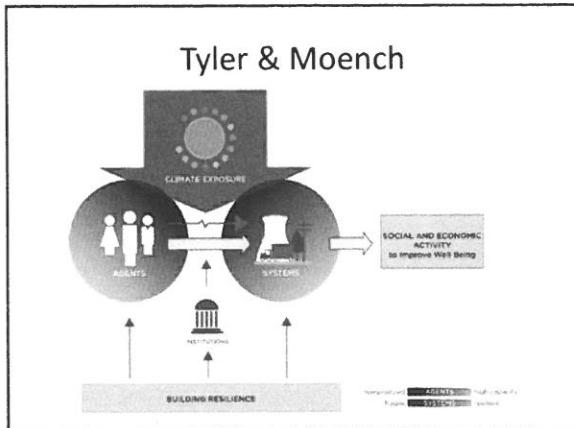
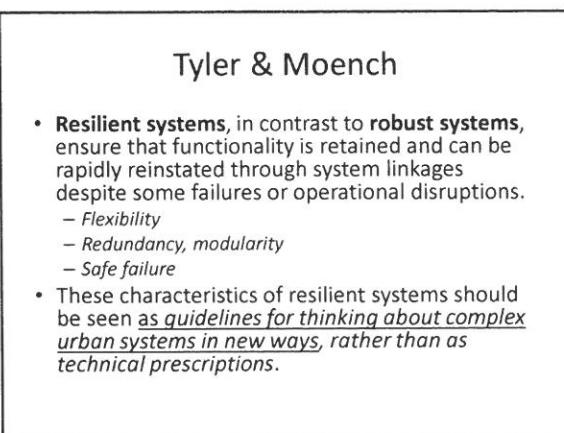


Figure 2. Applying the framework to resilience planning (used by permission).



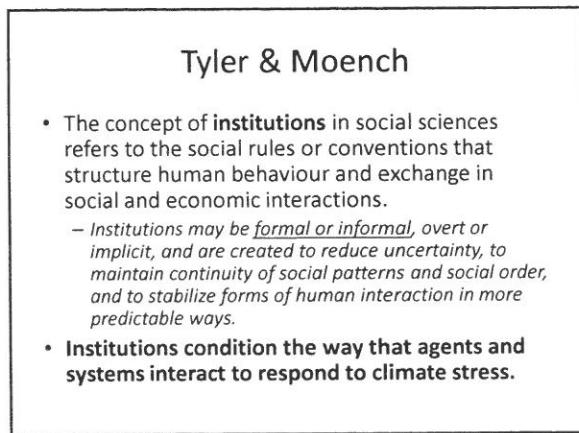
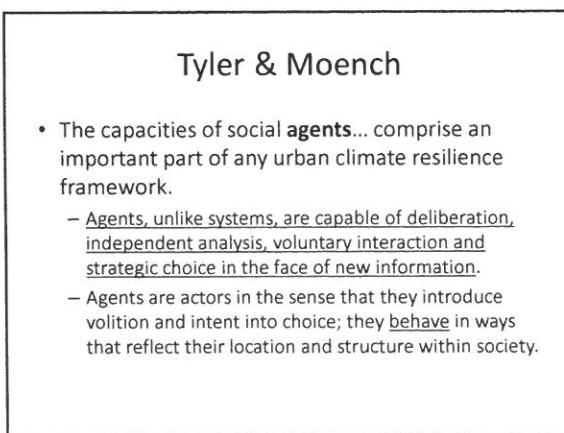
Tyler & Moench

- We identify three generalizable elements of urban resilience: **systems, agents and institutions**.
- **Core or 'critical' systems** are essential to urban function.
 - Their failure jeopardizes human well-being in all affected areas, and precludes higher order economic activity until their function is restored.
 - **These systems include water and food supply, and the ecosystems that support these, as well as energy, transport, shelter and communications.**



Tyler & Moench

- **Agents**, or *actors in urban systems*, comprise the second key element in the resilience framework.
 - They include individuals (e.g. farmers, consumers); households (as units for consumption, social reproduction, education, capital accumulation); and private and public sector organizations (government departments or bureaus, private firms, civil society organizations).



Tyler & Moench

- **Governance** (i.e. the process of decision making) is an important factor affecting resilience.
- *Decision-making processes that build resilience for vulnerable groups are likely to be participatory and inclusive, allowing those individuals and groups most affected by climate hazards to play an active role in determining how best to avoid them.*

Tyler & Moench

- **Public information** is an important component of a positive institutional environment.
 - Communities who have access to timely hazard information are better able to respond to climate threats.
 - *Institutional structures that foster learning and change are important tools to build agent capacity.*
- *Rights and entitlements linked to system access; Decision-making processes; Information flows, Application of new knowledge.*

Meeting Summary v2.0

A Resilient Legacy for West Virginia Stakeholder Workshop

Hosted by the WV Department of Environmental Protection
601 57th Street
Charleston, West Virginia
9:30AM to 4:00PM



November 29, 2016

Participants

- Brian Aluise, Office of the Governor - Department of Commerce
- Bob Baber, Richwood, WV
- James Bush, West Virginia Development Office
- Pat Campbell, WV Department of Environmental Protection
- Laura Conley-Rinehart, Department of Highways
- Gary Criner, West Virginia National Guard
- Allison Eckman, West Virginia Land Use and Sustainable Law Clinic
- Brian Farkas, West Virginia Conservation Agency
- Matt Ford, CORE Environmental and Greater Greenbrier County Long Term Recovery Committee
- Bethany Freeman, WV VOAD
- Patti Hamilton, WV Association of Counties
- Randy Huffman, WV Department of Environmental Protection
- Rusty Joins, WV Dep't of Environmental Protection – Homeland Security Emergency Response
- Al Lisko , West Virginia Division of Homeland Security
- Scott Mandriola, West Virginia Department of Environmental Protection
- Vivian Parsons, County Commission Association
- Jennifer Pauer, DEP Stream Partners
- Rob Rice, West Virginia DEP – Abandoned Mine Lands
- Jesse Richardson, WVU College of Law
- Kevin Snyder, FEMA
- Dennis Stottlemyer, West Virginia Department of Environmental Protection
- Russell Tarry, West Virginia Development Office
- Mary Jo Thompson, West Virginia Development Office
- Kelly, Workman, CDBG Program Manager – WVDO
- James, Young, Kanawha County Planning and Development Office

And the ILI Team:

- Adam Saslow, Institute for Local Innovations
- Kandi Brown, NewFields Government Services
- Ira Feldman, greentrack Strategies
- Peter Soyka, Soyka & Company, LLC

The meeting opened at 9:35AM.

The organizers had expressed several goals for this workshop:

1. Frame the scope of and process for executing this project
2. Review and discuss the existing bodies of work on preparedness and resilience in the state
3. Identify ongoing flood management efforts in and around West Virginia
4. Present the Tyler and Moench framework for climate resilience, and
5. Consider the potential for application of the Tyler and Moench framework in two watersheds, and perhaps more broadly.

Welcoming Remarks

Randy Huffman, West Virginia Department of Environmental Protection

Mr. Huffman noted the reason he brought the group together was to address flooding events around the state, recognizing that they will happen again and again. Communities will always struggle to rebuild. He wants the group to focus on WV Resiliency Planning, not flood prevention. Key aspects of good planning address:

- Minimizing the impact to public health, the economy and the environment
- Providing redundancy of infrastructure
- Recognizing flood plains and their impact on zoning and road building.

He doesn't want this group's work to be a duplication of the 2004 Flood Plan but be a natural progression of that work. He insisted that we are not convened to "reinvent the wheel" and DEP does not "own this project"

Once funded, the hope is that Phase II pilot testing will focus on two watersheds with potential expansion to others as funding is identified and made available.

He noted appreciation of the diversity of the group and that their efforts would ultimately result in saving lives and reducing the cost of rebuilding.

Introductions and Administrivia

Adam R. Saslow, Senior Facilitator, Institute for Local Innovations

All attendees introduced themselves, the organization that they are with, and their roles in recent flood events.

Amidst the introductions, Ms. Patti Hamilton with the Association of Counties informed the group that they had conducted a long term planning workshop (with PWC) in late August with 60+ in attendance.

Mr. Richardson with WV University noted they have produced 35 Comprehensive Plans for communities which also address resiliency issues.

*** Note that the ILI Team is looking to acquire any and all documentation on the above and will be happy to forward whatever is collected. ***

The Project Context

Presented by Ira Feldman and Peter Soyka, the ILI Team

Mr. Soyka kicked off this section with presentation of Project Context slides (Attachment A) as a means for setting the stage for the conversations today. Attributes of floods and disasters and their mitigation or magnifying factors were discussed. He noted that the project would be executed in three phases.

- Fact finding
- Community level engagement
- Pilot testing.

Phases 2 and 3 are not currently funded.

Mr. Campbell asked for clarification on the timing of Phases 2 and 3. Mr. Soyka responded that these phases would, hopefully, be completed by the end of 2017 if funding becomes available.

Mr. Farkas noted they he was having trouble envisioning what “success” would be for this project. Mr. Soyka responded that success would mean that within an impacted community they would have capacity to better anticipate issues, prepare for events, and quickly rebound from disaster. Mr. Farkas and Mr. Soyka agreed that the framework could help with long term placement of public infrastructure factoring in risk and cost. Mr. Feldman further noted that a successful framework would help WV develop a coherent, enhanced, integrated systems approach to all-hazards preparedness - not only focusing on climate change but also the full range of hazards -- natural and manmade.

Progress in West Virginia – This Effort Involves Leveraging All That Has Been Done

Brian Farkas, WV Conservation Agency

Al Lisko, WV Division of Homeland Security

Kelly Workman, WV Department of Commerce

Kevin Snyder, FEMA

Panelists had been invited to discuss the 2004 Flood Management Plan, the HUD application for the National Disaster Resilience Competition, as well as efforts by FEMA to collaborate and coordinate with various governmental entities.

Mr. Farkas: Achievements of the Flood Management Plan of 2004

Issue	WVCA Perspective
The types and extent to which actions were implemented	Try to convince people “that dredging is not the answer to flooding.” Stormwater management is an aspect of the plan that is “not working.” They are funded under the Clean Water Act to do education and training. However, it isn’t working and soil still gets into the rivers. 2005—Senate considered a bill to create a Flood Protection Planning and Advisory Council which died in the House. In 2008 the plan was tweaked and reintroduced but it died in the Senate. Since then, each agency seems to work in its own silo. They then scramble to address crises. 713u—gives counties authority to deal with flooding including remove debris, etc. Levies are authorized. Very important, but implementation is spotty
How well they worked	Counties have local plans, unclear they have been implemented. “Some of the plans have been implemented, but not necessarily in the name of the larger flood plan.”
Lessons learned from their implementation	Enforcement if the critical issue for success. The plan was adequate but no one was tasked with implementation and enforcement. “The plan tried for a paradigm shift, but it was not understood and then left alone.”

Issue	WVCA Perspective
Remaining gaps requiring attention	<p>People “can’t be allowed to move from one substandard home to another substandard home.”</p> <p>Now is a good time to revisit the plan.</p>

Mr. Lisko: Achievements of the Flood Management Plan of 2004

Issue	DOH Perspective
The types and extent to which actions were implemented	<p>Mr. Al Lisko reviewed the recommendations listed on page 5 of the Flood Plan’s Executive Summary.</p> <p>State law—limits planning, restrictions to the minimum needed to get flood insurance. Law is opposed by land use advocates who see it as an “infringement of rights.”</p> <p>Management has improved over time, but varies a lot by community. Politics govern.</p> <p>Business and community leaders are very influential in the administration and enforcement of ordinances. The Richwood schools, for example, may be rebuilt in the floodplain.</p> <p>There is no penalty on communities for not enforcing ordinances. No penalties from FEMA.</p> <p>Inadequacy of flood warning systems - especially where not monitored (smaller streams).</p> <p>Flood plain mapping using LiDAR (vs 100 year flood plain) is available and being updated to include property parcels.</p> <p>Flood damage assessment is lacking. No one has time to record the history of these events. WV NG has a good record of resulting demolitions.</p> <p>Building codes are a tough sale. But Jesse Richardson counters that this is changing and is being vetted in Comprehensive Plan development. He thinks the change is driven by desire to access grant funding which requires planning.</p>
How well they worked	The WV Flood Plain Management Annual Meeting was noted as a success story for education.
Lessons learned from their implementation	Flood planning is all local. Needs local political support. They have developed 3 separate plans for resiliency and none are being implemented.
Remaining gaps requiring attention	<p>A lot is not working well.</p> <p>FEMA can only rebuild what was lost, but it cannot pay for a comprehensive upgrade of systems.</p> <p>Local communities say “Gimme, gimme, gimme,” but then do not have the ability to maintain structures or even facilities.</p> <p>Maximum federal assistance per family is \$33,000. SBA Loans provide additional relief. In some cases, SBA loans are a first step.</p> <p>Inadequate resources are afforded for resiliency. The state hungers for economic development and that takes priority over mitigation. “What good is a house if I do not have a job?”</p>

Ms. Workman: National Disaster Resilience Competition

Issue	DOC Perspective
The types and extent to which actions were implemented	<p>Ms. Workman presented the slides in Attachment B.</p> <p>The HUD plan also recommended the establishment of a Resiliency Council.</p> <p>App designed around local consultation. Held meetings with County commissions, EM people, many others.</p> <p>Used “Adjust, Adapt, Advance” concept.</p>
How well they worked	<p>Not funded. Among other feedback, HUD was looking for more innovation.</p> <p>Advance phase: biggest portion. Move people out of floodplain. PMLD—use reclaimed mined land. Of the \$142M application, \$110M was for reclaimed mines.</p> <p>“A tiny needle to thread” – it was tough to find WV communities that met HUD criteria. Most distressed; most impacted; unmet needs. See slide with HUD scoring criteria.</p> <p>Only 5 WVA counties met the criteria – Lincoln, Logan, McDowell, Mingo, Wyoming, and Boone.</p> <p>Housing data tough to find, so had to use other criteria.</p> <p>Needed to show replicability, provide leverage. Had other federal support, but no state funds to offer. Needed more environmental enhancement.</p>
Lessons learned from their implementation	<p>Overall, it was a robust competition and a rewarding experience.</p> <p>People now aware of resilience concept, may be more supportive of making investments.</p> <p>Great concepts to use:</p> <ul style="list-style-type: none"> - Council - Data portal (like KY) - Integration of resilience, zoning, flood plain management processes that prevent flooding. <p>Winners were recognized for good long-term resilience planning. Some had long term plans on the books and were a bit ahead of West Virginia. Winners included: Tennessee’s “Rural by Nature”; Shelby County’s “Greenprint for Resilience”; Connecticut “Coastal Resilience Plan.”</p> <p>Debrief—needed more innovation, green elements. Leverage not enough. Needed a theme. We may have also been hurt by the perception that we would not have been able to spend funds quickly, (i.e., capacity, and according to their rules). No banking or corporate partners participated. Few private foundations in WV. Population density may have been an issue as well (New York City and others got money).</p> <p>Division of Highways agreed to match funds for PMLD activity, but few other matches found.</p> <p>HUD is moving toward Smart Growth.</p>

Mr. Farkas noted that he is now seeing Agriculture agencies funding NGOs rather than states as it gets money out and on the ground more quickly. That speaks to the leverage issue as well.

Snyder – FEMA Coordination

Issue	FEMA Perspective
The types and extent to which actions were implemented	<p>Big event like this summer's flood requires federal-wide response, not just the National Flood Insurance Programs. The federal government deploys people and resources based upon needs (including but not limited to housing, health, social services and others).</p> <p>The National Guard provided introduction to many local entities and organizations. We knew conditions on the ground in affected communities.</p> <p>Disasters accelerate downward spiral of troubled communities.</p> <p>FEMA tries to work across silos -- FEMA, EDA, HUD, ACE.</p>
How well they worked	
Lessons learned from their implementation	<p>"A tragic event, but with opportunities."</p> <p>"Exciting...opportunities to leverage."</p>
Remaining gaps requiring attention	<p>"How to define roles and responsibilities."</p> <p>Field coordinators have other duties.</p>

Participants noted that there is some interest (Mercer County) in developing comprehensive zoning ordinances. Businesses and lenders now demanding plan, building codes, zoning. This is especially important near the Virginia border, with new arrivals to West Virginia.

Many individuals noted that most resilience work is an "other duty as assigned." As such, staff can assemble people for special tasks, but continuity is really hard.

Roundtable Discussion of Other Initiatives and Activities Related to Resilience and Flooding

Speaker	Organization	Commentary
Matt Ford	GGLT	<ul style="list-style-type: none"> Role is "to connect the dots." People, organizations and un-met needs. Lots of overlap among groups and what they are working on. Need to know what's out there, what we can contribute to. 200 cases of damage this year, but had 1100 apply. Need to reconcile economic development and flood mitigation. Challenged FEMA's cap on maximum compensation.
Kelly Workman	WVDO	<ul style="list-style-type: none"> Willing to contribute thoughts and expertise as needed.
Vivian Parsons	County Commissioners Association	<ul style="list-style-type: none"> Role is troubleshooting and connecting people. Provides training to members.

Speaker	Organization	Commentary
		<ul style="list-style-type: none"> Worked with Association of Counties, PwC, and others about resilience. Triage has solved immediate needs but we have much to do to improve conditions for the future. All feel overwhelmed when crises hit. See some signs of burnout in those who are on the front lines. Commissioners have 6 year terms. Turnover every 2 years. Who is in charge? Who is coordinating response efforts?
Laura Conley-Rinehart	Department of Highways	<ul style="list-style-type: none"> Keeps roads and right of ways clear, for emergency responders and others. Once the National Guard is involved, they fall back to primary mission of clearing state roadways. Regulations are limiting - NHPA, NEPA, etc. We try to communicate quickly between agencies and notify others where the DOH is working. We struggle with where to put the debris? Several districts clear fields before disasters strike so that debris will have a place to go. DOH Jurisdiction is limited to the roadway and the right of way. "Need to manage crises before they happen."
Brian Farkas	WVCA	<ul style="list-style-type: none"> We need a Debris Management Plan for WV. We spend a lot of time interacting with sister agencies in triage fashion. We need policy on what will be moved, who can move it, and what will be left. Debris from a 1,000 year flood should be left where it is. Conservation can remove debris from in-streams and near streams, mostly woody debris. We work to the top of the bank. FEMA has a Debris Management Plan. Ours should be based on their template. "Five people in a room could thrash it out" though we need to include state, locals, private landowners.
Al Lisko	DHS	<p>Likened "resilience" to health care"- many of us are too busy to pay attention to details on either their own health or disaster resilience. "No attention until there is a crisis."</p> <ul style="list-style-type: none"> Flood planners play role of family doctor—tell people what they don't want to hear. Disaster recovery is like an ER visit. Hazard mitigation like physical therapy. Buying property is like amputation as it comes out of the taxable base. Hazard mitigation grant program bought properties. Noted in agreement with Jesse that the major obstacles to success are: staff limitations, limited \$, and people's reluctance to enforce ordinances against neighbors.
Russell Tarry	WV Development Office	<ul style="list-style-type: none"> Community Advancement Office is coming. It may include the Office of Economic Resiliency. The focus will be on disaster recovery and better preparedness. Looking at funding options including HUD and FEMA. Looking at the Pennsylvania example. Handling CDBG disaster funds from HUD (\$17 MM). 80% of resources may go to the Greenbrier and Kanawha (most affected housing) watersheds.

Speaker	Organization	Commentary
		<ul style="list-style-type: none"> Reviewing proposals, consultant qualifications so as to prepare Plans – “Action plans for disaster recovery” -- for use of funds. Needs help on structuring of new office. Wants to be the “hub” for info and resources. Want to avoid duplication of efforts. Has started community outreach efforts. Will scale up in future.
Brian Aluise	Office of the Governor	<ul style="list-style-type: none"> Endorsed Mr. Tarry’s remarks. The RISE grant program (\$10k) helps affected small businesses. Stationed at FEMA DRCs when flood hit. Inspiring to see donations, even from victims. Uses a bottoms up approach; “disaster concierge” service.
James Bush	WVDO	<ul style="list-style-type: none"> Manages the grant program for water and sewer projects, education, planning. Not directly related to disaster resilience, but interested in the econ development aspects of it. The “Flexigrant program” is a mini-grant that funds planning for counties. Could support some across the state.
James Young	Kanawha County Planning & Development Office	<ul style="list-style-type: none"> Point person for flood response in the County The floodplain manager is the one who tells people they can’t rebuild on their sites. Supports Clay County and others with limited resources. Working directly with Clendenin. This is a time to reinvent that town—resilience has to be a core concept as it will not survive another flood. They need planning and capacity building as well as funding. Working on a private property debris program.
Patti Hamilton	WV Association of Counties	<ul style="list-style-type: none"> Limited role, but disseminated information throughout the crisis Connected people across counties (.e.g., RISE program) and their new Counties helping Counties. Helps develop coalitions—important for counties with small staff. Longer term, they are developing leadership through their Leadership Academy. They need visionary thinking—how to get in place. WV spends lots of time looking at the past, need to shift focus. “Looking at the past is not getting us anywhere.” That may have been factor in not getting HUD grant.
Jennifer Pauer	DEP Stream Partners	<ul style="list-style-type: none"> Has supported watershed associations for more than 20 years. Need to work from bottom up, where the people are. Stream Partners is great at education and can get funding, volunteers. Have monthly meetings. “Have to educate people in the communities – the key to making any changes.” Funded 20 with grants, about 30 statewide. Four statewide coordinators. <p>Watershed Association’s role</p> <ul style="list-style-type: none"> Communication in the community Corporate connection in some cases Knowledge of volunteers, government, water quality Ability to write grants and manage funds

Speaker	Organization	Commentary
		<ul style="list-style-type: none"> • Sustainability – Watershed movement 1996- 2016 many still around • Monthly meetings in the communities • Can and do hire VISTAs
Dennis Stottlemeyer	WV DEP	<ul style="list-style-type: none"> • Does lots of education, outreach. • We offer good tools.
Rusty Goins	DEP EMD	<ul style="list-style-type: none"> • “Need to connect the dots.” • Emergency management—requires constant interaction with others. • “Must expand capabilities.” • Lots of people willing to contribute during an emergency.
Kevin Snyder	FEMA	<ul style="list-style-type: none"> • He is personally amidst a 2-year commitment to the State of West Virginia. We “need for long-term recovery strategies.”
Gary Criner	West Virginia National Guard	<ul style="list-style-type: none"> • Force multiplier, works with lots of other organizations. • Working with FEMA, NREL, vocational schools (making tiny houses for victims), distributing supplies.
Jesse Richardson	WVU Law Clinic	<ul style="list-style-type: none"> • Land conservation and land use planning are key functions including zoning and dilapidated building ordinances • They are in the business of education and technical assistance and utilize 6-10 law students. They target planners and others. • The Law Clinic has worked on 35 resilience plans. Only a few are not in a flood plain. • They are involved in the Mountain State Land Use Academy • The Law Clinic has been working with the City of Norfolk on a resilient zoning ordinance underway. Ms. Brown has collected more information for those interested • Looking ahead, the legal basis is a bit of a mess. We should update the Flood Plan. We need a structure for organizations to communicate. They do not like idea of “keeping communities alive.” We need something more positive
Allison Eckman	WVU Land Use Clinic	<ul style="list-style-type: none"> • Event-Serve—is a clinic featuring many land use groups. • “Planning for the Next Flood” - 60 people attended, got PDUs. • Goal—to be proactive, stay engaged post-disaster • Allison is a VISTA - a Volunteer In Service to America (VISTA) volunteer—this is a valuable resource for state government. VISTA’s can help support plan implementation, grant preparation and more. Goal is to fight poverty. • On February 20, there is a WV Municipal Planners conference.
Pat Campbell	WV DEP	<ul style="list-style-type: none"> • We need to minimize flooding and reduce sediment through runoff control • We have seen layoffs of foresters – those with the expertise to maintain runoff controls • Funding for stream gauges has been cut. Unfortunately, these gauges are a key source of info on stream conditions. Need to find ways to keep it going

Speaker	Organization	Commentary
		<ul style="list-style-type: none"> Post-construction controls? Don't last beyond construction phase. This needs to be addressed. With the new Governor "who has firsthand flood experience," maybe we can revive portions of Flood Plan. There should be opportunity here to make something happen.
Rob Rice	DEP- Abandoned Mined Lands	<ul style="list-style-type: none"> Deals with water management, mine blowouts and other emergencies. WV DEP has open ended GIS mapping contracts in place WV DE has maintenance contractors too. These can be made available to others. Need to provide your own funding for these.
Bob Baber	Mayor, Richwood	<ul style="list-style-type: none"> Richwood has vast potential. Want to be the town that didn't die. Reinvent with tourism. Comparison to Aspen. Tip of the spear of New Appalachia - and one that can stretch to Eastern Kentucky. Wants ideas. Needs to have faith and self-belief. Likes the ham radio idea from Boulder report.

As the conversation opened, Mr. Lisko noted a few key constraints:

- Staff (3-5 responsibilities each);
- Money;
- Personal relationships that distort public private-relationships.

Later, DEP staff summarized the following:

Obstacles:

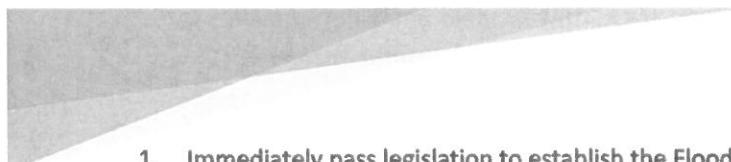
- Legislative action
- Local government policy – will not enforce ordinances
- When the water is moving fast who is paying attention to the warnings?
- Individual decision on development and evacuation
- Maintenance
- Leadership – and supported efforts from the top although the work will be successful from the bottom up in the communities
- Media – they deliver the message that state will fix it if you get flooded and you have developed/built your home in the floodplain. Local TV news does this all the time!

Opportunities

- Increase stream crossing culvert size and coordination of funding
- Stormwater management – education of everyone is needed
- Legislative authority and funding
- Buy out and rebuild floodway property
- Long-term resilience council – HUD Application take this and work from there
- We have data- use the NRDC WV HUD application
- Comprehensive plans - DEP is funding some of these in the Bay drainage with Chesapeake Bay funds / WVU is doing this

- Focus on smart economic growth – FEMA and the federal commitments
- Create a debris management plan – it would not take much effort or time
- We have 35 WVU comprehensive plans
- Visionary Planning – getting WV's to think differently
- Community Development Office
- All of the partners in this room
- Long-term smart thinking and being proactive

Mr. Soyka wrapped up the session by offering the following ideas as next steps:



1. Immediately pass legislation to establish the Flood Protection (or perhaps an “All-Hazards”) Planning and Advisory Council. Perhaps an Executive Order would be a faster/cleaner way?
2. Within the first 100 days, convene appropriate agencies to develop and complete a WV Debris Management Plan.
3. Promote and provide resources for the WVDO Office of Resiliency to be the “hub” for all-hazards planning and state level coordination as well as the information clearinghouse for data and information related to flood protection and policy.
4. Support Phase II Application for a Framework for Resilience Planning to be piloted in the Elk River watershed and along the forks of Cherry River.
5. Support flood response, comprehensive planning, and the sustainable reconstruction of Clendenin
6. Advance a Resilience Curriculum at the Leadership Academy at the WV Association of Counties
7. Work with the watershed associations (about 30) involved with DEP’s Stream Partners program to promote disaster resilience planning in WV watersheds with active groups. (I talked with Jennifer about this bullet, Stream Partners leans a bit more towards water quality. Maybe the message here should be to communicate the message of building/rebuilding with resilience via every agency’s contact with interest groups)

Toward a Comprehensive but Flexible Solution: The Tyler and Moench Framework

Presented by Ira Feldman and Peter Soyka, the ILI Team

Mr. Feldman opened by noting some of the comments that had been raised in the discussion thus far, including:

- Coordination, collaboration, integration, systems approaches



Strategies for Recovery

DR-4273 Recovery Support Strategy Briefing

WV 2016 Severe Storms, Flooding, Landslides and Mudslides

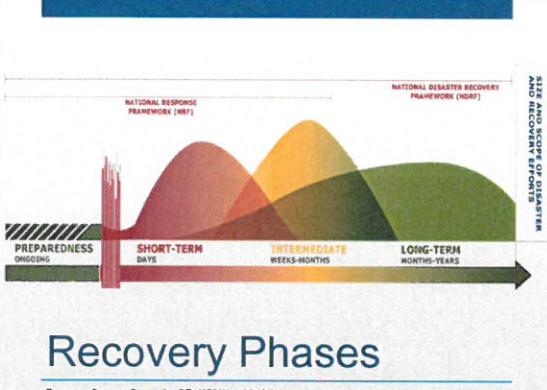
  

1. Provide initial recovery strategies
2. Solicit comments on those strategies
3. Identify a path forward

Briefing Objectives

Recovery Support Strategies DR-4273 West Virginia

2

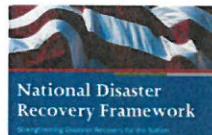


Recovery Phases

Recovery Support Strategies DR-4273 West Virginia

3

- Achieves better federal engagement (Recovery Support Functions)
- Focuses on long-term recovery
- Promotes intergovernmental, public, and private partnerships
- Provides coordination to prevent missed opportunities
- Takes advantage of agencies' existing resources
- Provides technical expertise



NDRF/RSS Planning Process

Recovery Support Strategies DR-4273 West Virginia

4



- Colorado Floods
 - TA for community-based recovery planning
 - Facilitated state and local peer-to-peer workshops
- Vermont Hurricane Irene
 - Community-based recovery planning
 - TA to 3 high-impact and low-capacity communities
- Joplin Tornado
 - TA Community-wide
 - Multi-sector
 - Recovery planning

Success Stories

Recovery Support Strategies DR-4273 West Virginia

5



DR-4273 Recovery Support Strategy (RSS)

- Builds on the Mission Scoping Assessment (completed September 2016)
- Develops objectives, strategies, and actions for each identified recovery issue
- Requires cooperation of agencies at every level and across many sectors



RSS Development

Recovery Support Strategies DR-4273 West Virginia

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- Broadband
- Economic Diversity
- Infrastructure
- Capacity

Cross-Cutting Issues

Recovery Support Strategies DR-4273 West Virginia

8



Economic Recovery

Recovery Support Strategies DR-4273 West Virginia

9

- Economic Diversity
- Lack of Internet Connectivity
- Limited Access to Capital
- Business Planning/Economic Resiliency
- Infrastructure Capacity
- Create and Sustain Brands



Issues

Recovery Support Strategies DR-4273 West Virginia

10

- Enable diversification in impacted areas
- Develop 4 sites/50 acres each in impacted area
- Expand National DWG program
- Revitalize downtown commercial districts
- Develop new & improve tourism attractions
- Staff, research, implement initiatives for broadband
- Create alternate financing options
- Educate community leaders on capital resources
- Promote strategic and succession planning
- Establish business working group to support economic disruption
- Identify supply chain vulnerabilities that impact disaster recovery

Strategies

Recovery Support Strategies DR-4273 West Virginia

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Housing

Recovery Support Strategies DR-4273 West Virginia

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- Increased Financial Burden
- Lack of Habitable & Healthy Housing
- Lack of Resilient Housing Options



Issues

Recovery Support Strategies DR-4273 West Virginia

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- Educate Homeowners on Preparedness Options
- Develop incentives to encourage mitigation strategies
- Address property title issues that prevent eligibility for federal assistance
- Identify issues preventing individual household recovery
- Increase housing opportunities for low to middle income households
- Encourage private redevelopment of blighted properties
- Develop resources to mitigate damaged private water crossings
- Address sheet flow damages for housing outside the floodplain
- Relocate or elevate all damaged structures including repetitive and severe loss structures
- Incorporate weatherization, energy efficiency, and sustainable design in recovery construction

Strategies

Recovery Support Strategies DR-4273 West Virginia

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Community Planning & Capacity Building (CPCB)

Recovery Support Strategies DR-4273 West Virginia

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- Local Recovery Capacity Exceeded
- State Recovery Capacity Strained
- Recovery Planning Challenges



Issues

Recovery Support Strategies DR-4273 West Virginia

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- Determine staffing needs to successfully manage recovery
- Fill the staffing gaps identified in the staff capacity comparison
- Determine any gaps in required skill level and knowledge base
- Implement training and education programs to meet recovery needs
- Determine staffing needs to successfully manage recovery
- Fill the staffing gaps identified in the staff capacity comparison
- Determine any gaps in required skill level and knowledge base
- Implement training and education programs to meet recovery needs

Strategies

Recovery Support Strategies DR-4273 West Virginia

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Goal: The State of West Virginia has the capacity to successfully manage and coordinate long-term disaster recovery

Objective: By July 1, 2017, West Virginia has sufficient staff to develop and successfully manage long-term recovery plans, programs, and projects

Strategy: Scope, fund, and stand up the West Virginia SRO

Action:

- Develop 3-5 year scope and staffing plan for SRO
- Coordinating Agency: State Recovery Office (SRO)
- Supporting Partners: Governor's Office, West Virginia Secretary of Commerce, FEMA, West Virginia Division of Personnel (WVDP),
- Secure funding for staff, facility, equipment and operating budget for minimum 3 years

Strategy: Determine staffing needs to successfully manage recovery

Action:

- Establish the baseline needs for effective recovery management. (Short-Term)
- Coordinating Agency: State Recovery Office (SRO)
- Supporting Partners: Governor's Office, West Virginia Secretary of Commerce, FEMA, West Virginia Division of Personnel (WVDP),
- Compare the state's recovery staff capacity to the established baseline. (Short-Term)
- Coordinating Agency: SRO
- Supporting Partners: West Virginia DOG, WDOF

Strategy: Fill the staffing gaps identified in the staff capacity comparison

Action:

- Secure funding and hire or cross-train identified staff as needed. (Short-term)
- Coordinating Agency: SRO
- Supporting Partners: WVDP, LDA, DDC

CPCB RSS Example

Recovery Support Strategies DR-4273 West Virginia

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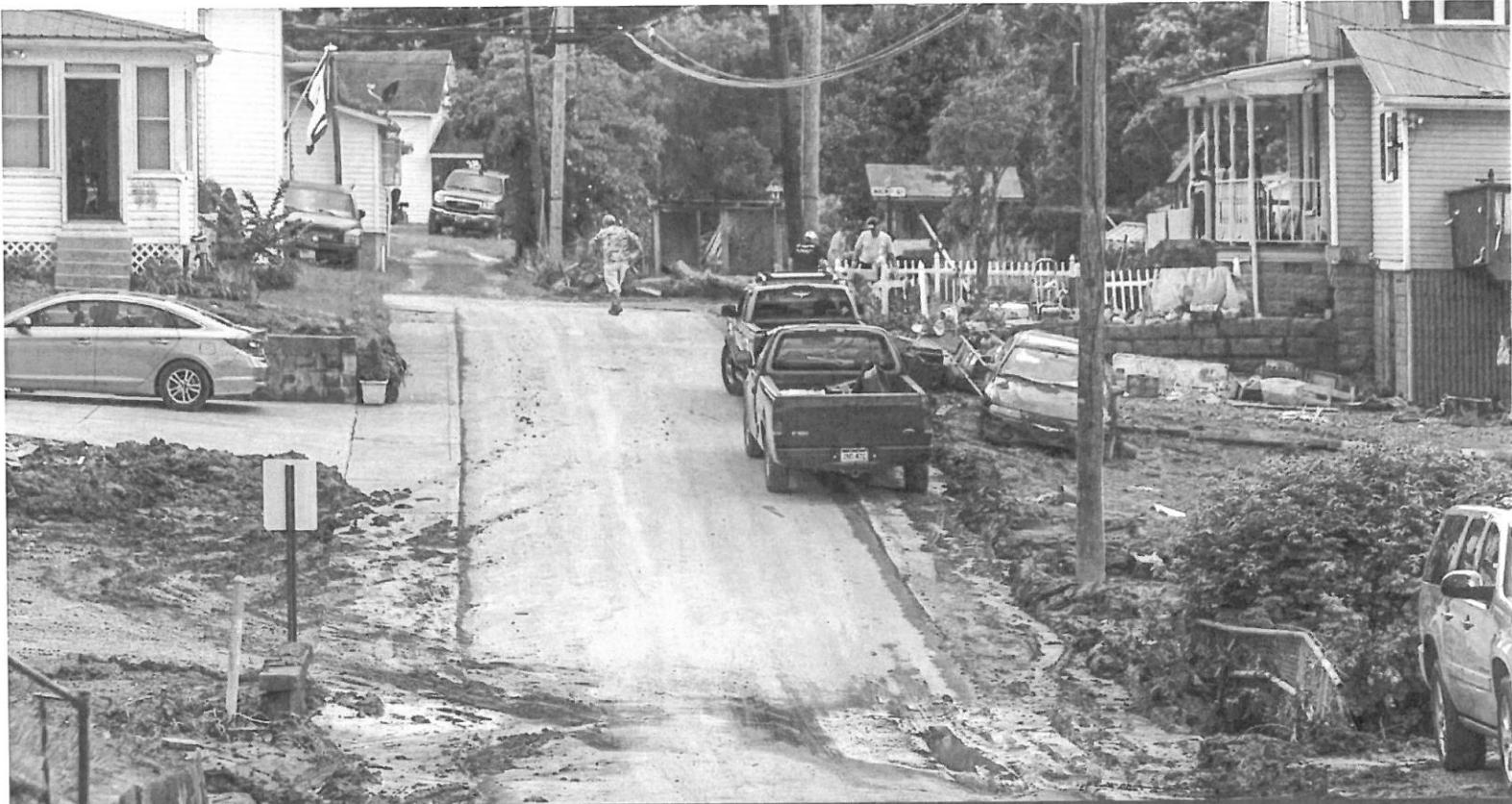
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▪ Share RSS v1.0
▪ Confirm/Establish Points of Contact
▪ Establish Meeting Schedule
▪ Transition

Next Steps...

Recovery Support Strategies DR-4273 West Virginia 19

The slide features a decorative graphic of several overlapping hexagons in green, blue, and purple, some of which have small text on them like 'team' and 'work'.



Mission Scoping Assessment

FEMA-4273-DR-WV

September 2016

Federal Interagency Recovery Coordination



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Executive Summary

On June 24, in response to severe storms, flooding, landslides and mudslides in West Virginia, Governor Earl Ray Tomblin requested federal assistance. On June 25, the president issued a major disaster declaration. As amended, the declaration designated 12 counties for the Federal Emergency Management Agency's (FEMA), Individual Assistance (IA) and Public Assistance (PA) programs: Clay, Fayette, Greenbrier, Jackson, Kanawha, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and Webster. Six counties were designated for PA only: Braxton, Gilmore, Lewis, Randolph, Upshur, Wayne. Additionally, FEMA Mitigation funding was made available statewide. The disaster caused 23 deaths. Thousands of West Virginians were uprooted from their damaged or destroyed homes and more than 100 businesses were severely damaged or destroyed.

Due to the severity and magnitude of the disaster, FEMA Region III Regional Administrator and the Federal Coordinating Officer assigned to West Virginia, requested a National Disaster Recovery Support Advance Evaluation Team (AET) to determine whether the state would require enhanced recovery coordination.

To lead and manage the state's recovery, Governor Tomblin appointed Adjutant General James A. Hoyer as Chief Recovery Coordinator (CRC) and Keith Burdette as the State Disaster Recovery Officer. The Advance Evaluation Team (AET) submitted its report on July 15, 2016. It recommended activation of a Federal Disaster Recovery Coordinator (FRDC) and three Recovery Support Functions (RSFs): Community Planning and Capacity Building, Economic and Housing.

September 7, 2016 was the extended deadline for survivors to register for FEMA's IA grant program and apply for disaster loans. By then, almost 5,000 applicants had been approved for IA grants totaling more than \$39.7 million. The U.S. Small Business Administration (SBA) had approved more than \$47.6 million for disaster recovery loans to 672 homeowners and 61 businesses. As of early September, approximately one thousand National Flood Insurance Program (NFIP) claims had been filed. FEMA had received 133 requests for public assistance and obligated more than \$9.7 million for recovery. It is estimated that total amount of federal funds obligated will exceed \$88.7 million.

The RSFs have identified the following major issues for West Virginia's long-term recovery from this disaster.

Community Planning/Capacity Building

- Local Recovery Capacity Exceeded
- State Recovery Capacity Strained
- Recovery Planning Challenges

Economic

- Pre-Existing Economic Conditions Exacerbated by Flood
- Impacted Businesses and Capital Needs
- Business Recovery and Preparedness
- Impact to Infrastructure
- Impact to Tourism and Regional Brands
- Agriculture Losses

Housing

- Increased Financial Burden of Homeownership
- Habitable and Environmentally Healthy Housing
- Prevalence of blight in communities
- Including resilience in rebuilding

Background and Current Situation

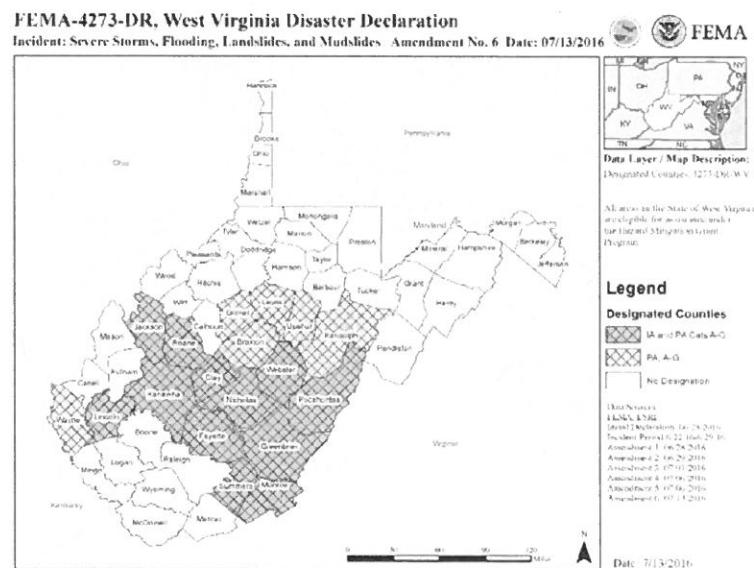
From June 22-29, 2016, severe storms, flooding, mudslides and landslides generated by a slow moving series of storms, one following right after the other brought damage and destruction to many areas of West Virginia. Rural communities, many already losing population and in economic decline, were the hardest hit. At the height of the storm over 65,400 customers were without power. Flooding left hundreds of individuals stranded, requiring rescue, evacuation and/or sheltering.

The severe weather conditions resulted in 23 confirmed deaths. Spanning multiple counties, the severe weather left homes, businesses, and infrastructures across the state damaged or destroyed. Governor Tomblin declared a state of emergency on June 23, 2016. On June 24, 2016, the governor requested a major disaster declaration and on June 25, 2016, President Obama signed a major disaster declaration for 12 counties (FEMA-4273-DR-WV). After the amendment of July 13, another six counties were designated as eligible for Individual Assistance (IA) and Public Assistance (PA), bringing the total number of designated counties to 18. The declaration also made Hazard Mitigation funding available statewide.

Due to the severity and magnitude of the disaster, FEMA Region III Regional Administrator and the Federal Coordinating Officer assigned to West Virginia, requested an Advance Evaluation Team (AET) to determine whether the state would require enhanced recovery coordination.

In rural areas, the mountainous terrain, covering most of the 18 designated counties, confines significant areas of residential and commercial development into low-lying riparian lands. This geographic constraint places much of the population within floodplains. Although no official count is available, it is estimated that 4,600 homes were damaged and 73 were completely destroyed. It is further estimated that approximately 234 businesses were impacted, including 49 businesses destroyed. FEMA has provided temporary rental assistance to 2,849 homeowners and renters displaced by the disaster.

On July 15, 2016, the AET, led by Region I FDRC, completed their report and the State concurred with the team's findings. The Report recommended the appointment of an FDRC and activation of three of the six Recovery Support Functions (RSF) Field



Coordinators to facilitate problem solving, improve access to resources, and foster coordination among state and federal agencies, recovery stakeholders, local governments and non-governmental partners. The three sectors identified for enhanced support are; Community Planning and Capacity Building (CPCB), Housing and Economic. RSF Field Coordinators worked along with the NDRS Cadre and their Advisors to conduct the Mission Scoping Assessment. On July 13, 2016 the Governor designated the CRO and the SDRO to lead and manage the recovery efforts for the state.

To date, 8,984 West Virginians had registered with FEMA to determine whether they qualified for Individual Assistance. FEMA approved 4,860 applicants for its individuals and households program and has given more than \$60.3 million in grants to the applicants. The U.S. Small Business Administration (SBA) has approved more than \$40.6 million in low interest disaster loans to assist 678 homeowners and 63 businesses in recovery. Under FEMA's Public Assistance program, more than \$10 million has been obligated for emergency response and infrastructure repair projects.

Methodology

The National Disaster Recovery Framework (NDRF)

The National Disaster Recovery Framework (NDRF) is intended to promote effective recovery from large-scale or catastrophic incidents and enable orchestrated support to impacted states, tribes and local jurisdictions. Its structure is flexible and adaptable for disaster recovery managers who must operate in a unified and collaborative manner, and focuses on how best to restore, redevelop and revitalize the health, social, economic, natural and environmental fabric of the community as well as build a more resilient nation.

The framework defines core recovery principles and the roles and responsibilities of recovery coordinators and stakeholders. It delineates a coordinating structure that facilitates communication and collaboration among all stakeholders, and provides guidance for pre- and post-disaster recovery planning. Lastly, the framework describes the overall process by which communities can capitalize on opportunities to rebuild stronger, safer and smarter.

Recovery Support Functions

When immediate needs have been addressed, the work of long-term recovery begins with attention to enhancing the resilience of individuals and communities to future hazards. As established in the NDRF, leadership at every level is essential to succeed, with inclusion of local disaster recovery managers, state disaster recovery leadership and the FDRC.

RSFs are groupings of core recovery capabilities that provide a structure to facilitate problem solving, improve access to resources and foster coordination among state and federal agencies, non-governmental partners and other stakeholders. Each RSF has a designated coordinating agency along with primary agencies and supporting organizations with programs relevant to the functional area. The RSF sectors are:

- Community Planning and Capacity Building (CPCB)
- Economic
- Health and Social Services
- Housing
- Infrastructure Systems
- Natural and Cultural Resources

Mission Scoping Assessment

The three activated RSFs; Community Planning and Capacity Building (CPCB), Economic, and Housing, conducted the in-depth technical review as reported in this Mission Scoping Assessment (MSA). Substantive data was gathered, analyzed and evaluated, applying recovery core capability specific expertise to identify recovery needs and issues as well as recovery related impacts in which State and local capabilities, and/or capacity, may be exceeded. Areas and communities requiring enhanced federal recovery support are also identified in this report, along with perceived gaps in resources available to meet recovery needs.

All three RSFs identified disaster related issues that have exceeded the State's existing recovery capacity. Accordingly, continued RSF activation may be necessary to coordinate and develop a Recovery Support Strategy (RSS). The RSF MSA findings also validate the Advance Evaluation Team's recommended FDRC appointment and Mission Assignment of other Federal Agencies to fulfill the RSF Field Coordinators' roles and responsibilities under the NDRF.

Results of the MSA offer insight into West Virginia's long-term recovery issues, challenges and opportunities, in accordance with the Recovery Federal Interagency Operational Plan (FIOP) and as envisioned in the National Disaster Recovery Framework.

Recovery Support Functions Findings and Recommendations

Cross-cutting Recovery Issues

Housing, Economic, and Community Planning and Capacity Building disaster recovery issues often overlap. Below are brief descriptions of these cross-cutting issues.

Central West Virginia has been hit by a sharp downturn in revenues from coal severance taxes, unemployment and multiple flooding disasters. The coal industry is experiencing a significant downturn. Unemployment is up not only in the extractive industries, but also in the once supportive construction, transportation and utility sectors. Lack of local jobs has led to a net out migration and a negative natural change due to the depressed economy. These factors are negatively affecting the quality and availability of affordable housing.

Flooding, mudslides, and landslides may have also compromised individual, private waste disposal systems. Fecal coliform levels in many West Virginia watershed are elevated (e.g., Elk, Guyandotte, Cherry, Greenbrier, and Gauley). The source of much of this pollution can be attributed to human waste, but flooding debris is more visible and of significant concern to the public's perception. Tailored, individual watershed strategies for this work may be appropriate.

Coal companies not only closed their doors but are also selling off their inventory. With less physical assets on the premises, county governments have less assets to tax. While county and other local government may have the administrative capacity to address disaster situations, there may not be any funds available to pay up-front costs and hire additional staff to handle specific disaster recovery tasks.

Housing disaster recovery must have a strong mitigation component to break the cycle of disaster disruptions. Recovery of impacted housing throughout the valley communities involves three inter-related resiliency issues; strong private water crossings, septic systems, and elevated, flood-resistant residences. Rapid flood surges can and often will cause severe disruptions to rural communities throughout the mountain valleys of West Virginia. Flood waters are not the only issue – landslides and mud slips have ruined many homes and disrupted travel and access into and out of these rural communities.

Since 2009, counties designated for the June 2016 flooding disaster have been part of up to six disaster declarations. Without another option to rebuild better and more resiliently, it is uncertain how long these rural communities can remain viable. Housing designers and community advocates should combine their collective, creative expertise to develop better rebuilding options.

Finally, survivor populations are much more likely to represent underserved populations than the balance of the state. Housing assistance applicants tend to live in housing of lesser value, have lower median incomes and are older than state norms.

Community Planning and Capacity Building (CPCB)

The mission of the Community Planning and Capacity Building (CPCB) Recovery Support Function (RSF) is supporting and building recovery capacities and community planning resources of local, state, territorial and Tribal governments needed to effectively plan for, manage, and implement disaster recovery activities in large, unique or catastrophic incidents.

Background

CPCB RSF worked with other federal partners to identify issues in the 12 West Virginia counties designated for FEMA's IA Program: Clay, Fayette, Greenbrier, Jackson, Kanawha, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and Webster. Among other resources, specialists used FEMA Program Damage Assessments and Applicant Registrant Reports, FEMA Information Data Analysis (FIDA), U.S. Census Bureau data, Social Vulnerability Index (SoVI), Baseline Resilience Indicators for communities (BRIC) scores, and Small Business Administration (SBA) disaster loan data to identify communities with the greatest challenges to recovery. Community Recovery Assistance Specialists focused on evaluating impacts to the most damaged communities relative to their capacity to manage, plan, and implement disaster recovery projects and strategies. CPCB, in coordination with federal partners (identified on page 9), and the State of West Virginia, culled and refined this information to identify relevant recovery issues, planning challenges and opportunities.

Analysis and Methodology

The severe storms, flooding, landslides, and mudslides of June 22-29 affected economically depressed communities across West Virginia from the northwest to the southeast. Many of these communities are small municipalities with declining populations, economies and, widespread poverty and blight.

While the disaster area includes the State's capital (Charleston, Kanawha County), the most challenged communities are in rural areas with economies dominated by mining and associated industries. Many communities have fewer than 2,500 residents and lack codified zoning ordinances or land-use planning and building inspection capacities. They are more likely to use state Regional Planning and Development Councils for community, transportation, hazard mitigation and water quality planning while others don't do any planning. Generally, communities with land use regulations and policies have greater capacity to shape and rehabilitate their built environment.

Recovery activities may diminish an already stressed community's strengths and reveal weaknesses. Post-disaster community planning can provide an opportunity to discuss and incorporate ideas and principles designed to foster resilience, address issues that created pre-disaster obstacles, mitigate risk and approach planning in an integrated way.

Socially vulnerable groups are often overwhelmed with their day-to-day livelihood and may not have the capacity to participate in planning for recovery. It is important to know where potential capacity gaps are and understand why they may exist. Additionally, ensuring that all voices are equitably included in outreach and community planning is vital to whole community recovery.

An assessment of social vulnerability is important as a means for determining where resources might be used more efficiently to assist in recovery. The Social Vulnerability Index (SoVI) shows the demographic makeup of communities. Social vulnerability describes the inequalities of who recovers and where.

It is more than just wealth and poverty or race and ethnicity indicators; it also demonstrates uneven capacity for preparedness and response. The pre-event social character of a place either enhances or diminishes its ability to adequately prepare for, respond to and recover from disasters.

The SoVI index synthesizes 30 socioeconomic variables that contribute to a community's ability to prepare for, respond to, and recover from hazards.

CPCB has identified 11 communities and one county that meet the criteria of having both sustained significant disaster impacts and limited recovery capacity.

CPCB Partners	
Coordinating Agency	FEMA/Department of Homeland Security (DHS)
Primary Agencies	FEMA/DHS U.S. Department of Housing and Urban Development (HUD)*
Supporting Agencies	American Red Cross (ARC) Corporation for National and Community Services (CNCS) Delta Regional Authority (DRA) Department of Agriculture (USDA)* Department of Commerce (DOC)* Department of Education Department of Health and Human Services (HHS) Department of Homeland Security (DHS) U.S. Department of Housing and Urban Development (HUD)* U.S. Department of the Interior (DOI)* Department of Justice (DOJ) Department of Transportation (DOT) Environmental Protection Agency (EPA)* General Services Administration (GSA) National Voluntary Organizations Active in Disaster (NVOAD)* Small Business Administration (SBA)* U.S. Access Board U.S. Army Corps of Engineers

**Federal agencies engaged in MSA development*



These areas of interest listed are:

- Camden on Gauley, Webster County
- City of Alderson, Greenbrier County
- City of Clendenin, Kanawha County
- City of Richwood, Nicholas County
- Clay County*
- Town of Cowen, Webster County
- Town of Gauley Bridge, Fayette County
- Town of Rainelle, Greenbrier County
- Town of Ronceverte, Greenbrier County
- Town of Rupert, Greenbrier County
- Webster Springs, Webster County
- White Sulfur Springs, Greenbrier County

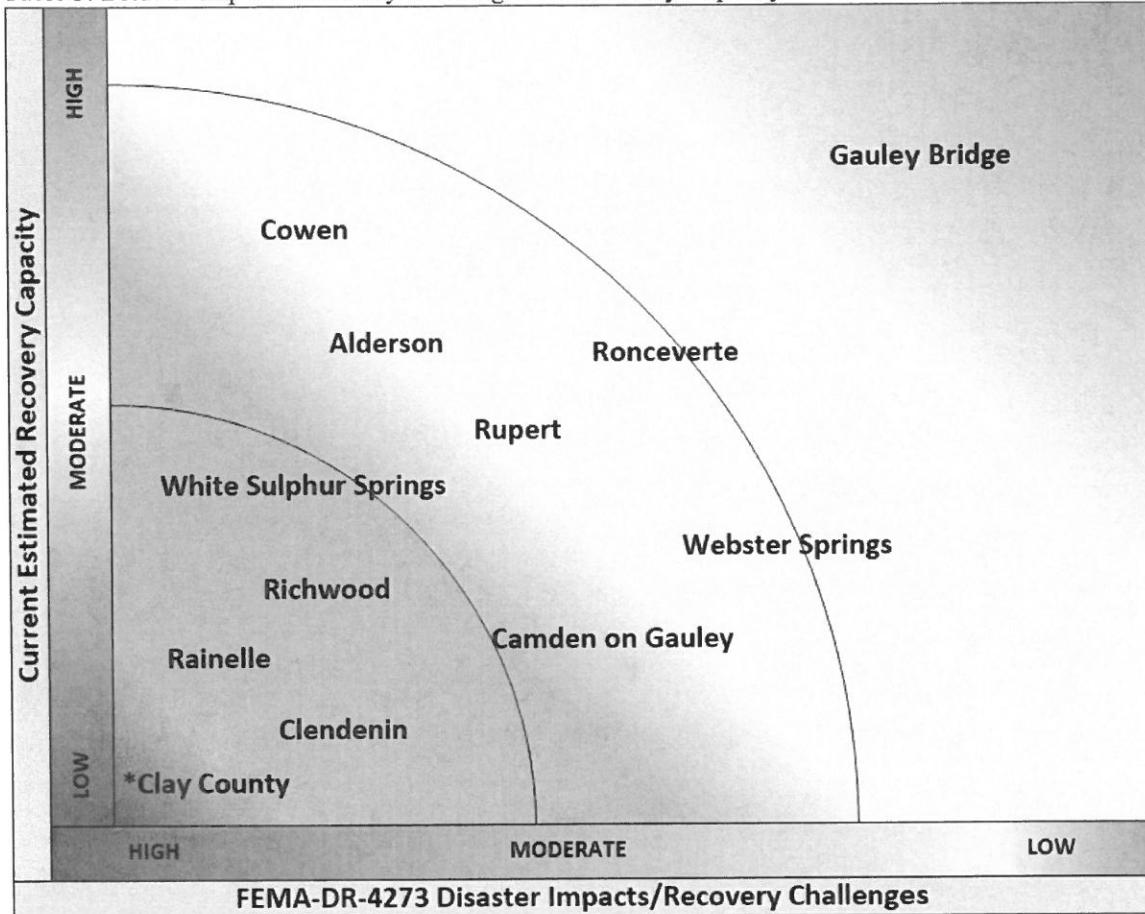
* Due to the size of Clay County (under 9,000 residents) and a population of under 500 residents in the town of Clay, it would be more effective to address at a county level rather than at a municipal level.

Another key determinant of relative disaster impact is comparative analysis of damage to communities. One primary factor is the percentage of damaged households in designated counties. FEMA Information Data and Analysis (FIDA) reports from the Individual Assistance program provide the FEMA Verified Loss (FVL) figures that were compared to the number of households within a community of interest. Another disaster impact comparison is damage to a community's infrastructure. In this case, public infrastructure damage information came from PA Preliminary Damage Assessment (PDA) estimates. Multi-sector damage information obtained from local officials and community organizations was factored in as a recovery challenge.

Recovery capacity was determined by conducting a preliminary analysis of a community's operations, including staffing levels, boards and committees, as well as evidence of existing hazard mitigation comprehensive and land use plans. CPCB also coordinated internally with other FEMA programs to identify recovery capacity, including NFIP program compliance, Voluntary Agency coordination, FEMA External Affairs coordination, and Disability Integration. Social and demographic indicators were also considered to estimate the time and resources that community members might have to dedicate to recovery efforts. A complete list of indicators and other demographic data can be found in the Community Conditions Assessment Appendix.

In the graph on page 11, the eleven communities and Clay County are plotted by disaster impacts/recovery challenges and recovery capacity as low, moderate or high.

Table 3: Disaster Impacts/Recovery Challenges vs. Recovery Capacity



Summary of Issues

CPCB identified three sector-specific recovery issues.

Local Recovery Capacity Exceeded

- Limited Staffing, Capabilities or Capacity
- Limited Access to Resources
- Continued Susceptibility to Flooding

State Recovery Capacity Strained

- Limited Institutional Knowledge and Staffing
- Need for Broader Recovery Coordination

Recovery Planning Challenges

- Lack of pre- and post-disaster recovery planning
- Lack of Comprehensive Planning

Local Recovery Capacity Exceeded

Recovery capability and capacity varies widely across the state. Recovery capability refers to the skills, competencies, resources and abilities of people, governments and communities needed to plan for, implement and manage disaster recovery efforts. Recovery capacity refers to the amount of capability available within the specific local communities. The size of West Virginia's communities ranges from very small in rural areas to medium sized urban areas. For example, Kanawha County has a population of nearly 195,000, while Clay County has a population of just under 9,000. Smaller communities in the WV disaster-impacted area lack capacity to address recovery issues such as floodplain administration, applying for and managing grants, ensuring code enforcement and compliance, developing and implementing recovery plans, and ensuring that the whole of community is represented in the recovery decision-making process.

Limited Staffing, Capabilities or Capacity

After the response phase of a disaster, recovery begins and the focus turns to meeting the survivor's immediate and short terms needs, such as home repair or food. Gradually the entire emphasis turns to long-term recovery. For impacted municipalities, damages from the disaster have likely strained the capacity of robust governments to manage recovery and diminished the ability of governments with meager resources to function effectively.

Increased workloads and other demands related to disaster recovery require a community to have the capacity to apply for and administer grants and other funding; create or revise planning documents; process permits, enforce building and land development codes and implement recovery projects and strategies. A wide range of staffed community departments and functions is needed to address the increased workload and provide training that may be needed to be effective in some of the long-term disaster recovery tasks. Many communities are quickly overwhelmed by the demands of long-term disaster recovery as they find themselves without staffing capability and capacity to support the government functions necessary for long-term recovery. There are currently no communities in the WV disaster-impacted with full-time dedicated recovery staff or with published disaster recovery plans in place.

Limited Access to Resources

Communities may have limited knowledge of or access to resources to meet individual, family and community recovery needs. In many instances, disasters negatively impact municipal tax revenues. This affects a community's ability to finance recovery activities including local grant match requirements. According to local representatives, communities often build back to pre-disaster conditions instead of incorporating mitigation and resiliency measures because it is easier and costs less.

Smaller communities often do not have the same broad range of recovery partners or available resources and therefore cannot absorb the costs as well as larger communities. Business closures can cause cascading effects upon the recovery of individuals such as job losses, lower incomes, or limited goods and services and upon communities from a loss or lessened tax base, further constraining their already limited recovery resources.

Without a broad range of recovery partners and resources, communities in the WV disaster-impacted areas will miss out on potential opportunities to build back smarter, safer, and more

resilient. This will also lead to missed opportunities for leveraging recovery resources. The next time disaster strikes, these communities will be much more vulnerable to disaster impacts.

Continuing Susceptibility to Flooding

The natural, built and economic environments of many West Virginia communities remain susceptible to additional damages from future floods. Many communities' structures and infrastructure were built to current Flood Insurance Rate Map (FIRM) Base Flood Elevations (BFEs), and these elevations may have been surpassed by subsequent flood events. Flood events and confusion about the National Flood Insurance Program (NFIP) requirements complicate owners' ability to make sound flood recovery and mitigation decisions.

NFIP's revised maps can create uncertainty. As homeowners are making rebuilding decisions communities may need to increase local regulatory floodplain monitoring. In addition, many residents in flood-prone areas face financial challenges bringing their homes into regulatory compliance.

Due to flood susceptibility and limited local regulatory monitoring, these communities are at greater risk of having NFIP compliance issues/violations, which may lead to suspension from the NFIP program; greater risk of damage resulting from future flooding; and higher insurance premiums resulting from improperly building existing structures back in accordance with local floodplain ordinance standards.

State Recovery Capacity Strained

Limited Institutional Knowledge and Staffing

The state has very strong preparedness, response and shorter term response capabilities but could benefit from additional long-term recovery workshops and training. West Virginia currently lacks a disaster recovery plan or an identified state-level agency that is pre-identified to lead recovery management efforts. Without clearly defined recovery roles and responsibilities, the State is limited in their ability to quickly and efficiently address a wide range of recovery issues and gaps. While many State agencies have some knowledge of their roles and responsibilities in disaster recovery, there exists no established recovery structure. This limits their ability to expeditiously and effectively address recovery needs and challenges. In the event of a new administration as a result of the November 2016 elections, a significant amount of institutional knowledge could be lost due to organizational restructuring and staff changes.

Need for Broader Recovery Coordination

Widespread disaster impacts across multiple sectors create a greater need for recovery coordination across federal, state and local partners to minimize duplication of efforts and optimize opportunity. State capacity affects all sectors of community recovery. Many recovery efforts are currently underway; however, the responsible parties need to ensure that all partners have a seat at the table. Otherwise, they may inadvertently reduce their ability to properly identify and leverage all available resources.

Recovery Planning Challenges

Pre-disaster recovery plans increase the speed of recovery. The quality of the recovery that takes place often determines how resilient a community is for the next disaster. Time pressures and difficulties in communication in the post-disaster environment make it difficult to increase a community's resilience. Pre-disaster planning is necessary to ensure adequate tools are available following a disaster and to ensure that the whole community works cohesively to reduce vulnerability to future events.

Lack of Pre- and Post-Disaster Recovery Planning

West Virginia's 11 Regional Planning and Development Councils (RPDCs) coordinate and provide technical assistance for regional and local planning efforts. Their plans include multi-jurisdictional hazard mitigation, transportation, security, watershed, broadband and other plans. Although they support locals and counties with critical planning support, due to budget cuts and staffing constraints, the RPDCs lack capacity for recovery planning and building capacity.

Locally driven disaster recovery planning processes assist communities in making informed decisions about goals, policies, priorities and projects that will guide overall recovery. Currently there are no known West Virginia communities with existing pre- or post-disaster recovery plans. There is limited awareness of National Disaster Recovery Framework concepts, principles, or tools and limited resources for recovery.

Lack of Comprehensive Planning

The existence and quality of a comprehensive plan is a measure of local capacity to conduct post-disaster recovery planning processes. It illustrates the conviction of a community to improve itself. A good plan is one that translates ideas into actionable projects, each with a project champion and deadline for implementation.

Inclusive planning efforts involve all populations, including the underserved and those with access and functional needs. Failure to integrate diverse and underserved populations in recovery efforts creates barriers to a full recovery.

Many of the communities identified in the disaster-affected area do not have comprehensive community plans. This is noteworthy because planning processes are a conduit to engage with stakeholders to define a shared vision before and after a disaster and to help ensure implementation of recovery opportunities.

Economic

The Economic Recovery Support Function (RSF) integrates the expertise of the federal government to help local, state, and tribal governments and the private sector, sustain and/or rebuild businesses and employment, and develop economic opportunities that result in sustainable and economically resilient communities after large-scale and catastrophic incidents.

Background

After an incident, the Economic Recovery core capability is best characterized as promoting coordination, integration, and collaboration among the economic recovery stakeholders of the affected area to support individual decision-making and leverage existing resources. Common stakeholders in this effort include chambers of commerce, economic and workforce development organizations, local governments, and regional planning organizations.

The most current economic impact data available was considered by the Economic RSF and its federal partners in defining the issues anticipated to frame future areas of federal focus and assist the state in developing their economic recovery strategies. Also, part of this assessment is an examination of the issues related to economic recovery and the challenges to developing long-term economic resilience in impacted communities in West Virginia.

The U. S. Economic Development Administration (EDA), designated by the U.S. Department of Commerce, is serving as the coordinating agency of the Economic RSF. EDA is collaborating with the state's economic recovery team to monitor potential economic impact reports—including those regarding tourism and direct business impact assessments—to determine unmet needs and identify potential assistance that might be delivered by federal partners to support economic recovery and resiliency initiatives.

Economic Partners	
Coordinating Agency	Department of Commerce (DOC)
Primary Agencies	FEMA/DHS
	Department of Agriculture (USDA)
	Department of Commerce (DOC)
	U.S. Department of Labor (DOL)
	Small Business Administration (SBA)
	U.S. Department of the Treasury (TREAS)
Supporting Agencies	
	Corporation for National and Community Services (CNCS)*
	Delta Regional Authority (DRA)
	Department of Health and Human Services (HHS)*
	U.S. Department of Housing and Urban Development (HUD)*
	U.S. Department of the Interior (DOI)*
	Environmental Protection Agency (EPA)*
	Department of Homeland Security (DHS)
	General Services Administration (GSA)
	Department of State
	Appalachian regional Commission (ARC)*

**Federal agencies engaged in MSA development*

Direct and indirect losses to central business districts and impacts to tourism and individual businesses are the primary areas of impact to West Virginia's economy. Additionally, inadequate recovery capacity, damages to housing and infrastructure could affect business recovery and economic revitalization to varying degrees.

The Economic RSF has gathered preliminary economic impact assessments, as described below, and met with local and regional economic development stakeholders to identify their primary areas of concern for impacted counties that lie within their jurisdiction. Based on those assessments, the Economic RSF identified communities within 12 counties in Central and Southern West Virginia that have sustained the most direct impacts to their local economies and have registered the greatest need for assistance in recovering individual businesses and recovering economic activity. Those counties include Clay and Kanawha in the Central region and Fayette, Greenbrier, Jackson, Lincoln, Monroe, Nicholas, Pocahontas, Roane, Summers and Webster Counties in the Southern region.

Assessing Economic Impacts

Certain economic impacts of the storm and flooding may not be fully realized for months or years to come. While the Economic Recovery RSF will continue to investigate economic impacts at regional and local levels, initial assessments are based on available information provided by the State of West Virginia's Department of Commerce, U.S. Small Business Administration (SBA), the U.S. Department of Labor (DOL), the U.S. Department of Agriculture (USDA), the Federal Emergency Management Agency (FEMA), and other RSF teams engaged in West Virginia's recovery.

Following the disaster, the SBA and DOL offered financial assistance to businesses and their employees who were impacted by the event for a period of time due to permanent or temporary business interruption. To quantify the range of economic impacts, the Economic RSF reviewed and will continue to consider the delivery of federal assistance and state supported programs offered to businesses, individuals, and local governments located in flood-impacted areas. The number of applications submitted and the dollar amount of assistance awarded through each of these programs provide some indicators of overall economic impact. Because of the limited scope of assistance each program can offer, however, the impact data they provide does not present a comprehensive description of the businesses, workers or communities affected by flood damage.

For instance, SBA loan applications can serve as a preliminary proxy to identify areas of impact because they reflect the level of initial interest for assistance in financing repairs to commercial buildings, replacing equipment or inventory, or assisting with business cash flow shortages. For a number of reasons, the number of applications or approvals does not necessarily reflect the full extent of the unmet funding needs of affected businesses. As days and weeks elapse following a disaster event, some business applicants will withdraw applications because they have satisfied their funding needs through collection of insurance claims or other sources and often business owners will not apply for SBA assistance because they do not qualify or cannot afford to take on more debt.

In order to develop a comprehensive picture of the economic impact and particular recovery challenges for individual communities, the Economic RSF is collaborating with the West Virginia Department of Commerce, Regional Economic Development Districts (EDDs), and local organizations to assess the comprehensive economic impacts as data and other relevant indicators – such as the collection of business and occupation taxes – as they become available. Continued assessment of the economic challenges will support the ability of the state and the local communities to define the challenges, identify resources to assist with addressing those challenges, and prioritize actions that need to be taken in order to both recover local businesses and integrate economic resilience measures into local economies.

REGIONAL REALITIES

The economic RSF has taken a regional approach to economic recovery due to the rural nature of the impacted area. The regional EDDs have instrumental tools and staff expertise that support community and economic development initiatives within their boundaries. EDD Regions 3 and 4 are the most severely impacted. Both EDDs are highly engaged in their communities, professionally staffed, and serving in both a leadership and coordination role within their respective boundaries as detailed below.

Region 4 Economic Development District (Fayette, Greenbrier, Nicholas, Pocahontas, and Webster Counties)

The region consists of 3,847 square miles and has a population of 125,625 (2010). The area is mountainous, lying within the Appalachian Mountain range. It is rural and is served in parts by major transportation routes US 60, US 119, & I-77.

Coal, timber, natural gas and tourism comprise a significant part of the economic activity of the area. The region includes some of the most highly recognized tourism destinations in the state including the Greenbrier Resort, New River Gorge Bridge, Summersville Lake, Babcock State Park and Hawks Nest State Park, and Seneca State Forest and the Monongahela National Forest, the Green Bank Radio Telescope Observatory and Droop Mountain Battlefield.

The five counties that are included in this region sustained some of the most extreme damage and economic disruption due to the flood, with communities in Greenbrier and Nicholas counties reporting the highest losses in infrastructure and business impacts. Greenbrier County hosts the Greenbrier Classic, part of the PGA-Tour, which was cancelled due to the flooding.

Initial assessments by local economic developers reported that more than 165 business sustained physical damage or other losses due to the June flood. About 35 of those businesses remained closed as of early September. The central business districts in White Sulphur Springs and Rainelle in Greenbrier County and Richwood in Nicholas County have completed their initial cleanup but are still struggling to fully recover. Local leaders in these communities have expressed concerns about limited staffing and financial resources to assist with recovery efforts. Elected officials in Richwood have requested assistance in hiring a contract coordinator to oversee major recovery projects.

Local economic developers initiated the process to obtain federal support in hiring regional disaster recovery coordinators to support local economic recovery efforts.

As they turn their focus on longer term flood recovery efforts, the regional EDDs and local leaders can enlist assistance from a strong network of economic development organizations including and academic institutions including Bridge Valley and New River Community and Technical Colleges.

Region 3 Economic Development District (Boone, Clay, Kanawha and Putnam Counties)

The region stretches across 2,108 square miles and has a population of 282,567 (2010). It includes Kanawha County, which is home to the capital city of Charleston and the Charleston Metropolitan Area, which includes half of the region's population. The Charleston area is also the center of the chemical and manufacturing industries, which are major economic drivers for the state's economy. Other major employers that operate in the region include the natural gas, lumber, agriculture, tourism, and health care industries.

The region is served by major transportation routes including US 60, US 35, I-64, I-77, and I-79. The Kanawha and Elk Rivers flow through this region, with the Kanawha serving as both a commercial and recreational waterway and the Elk as a recreational waterway. Tourism destinations in the county including Kanawha State Forest, Carnifax Ferry Battlefield and the State Museum. The area also includes Yeager Airport, the largest airport in the state, with both commercial and domestic flights.

Flood damage to the infrastructure and central business districts in this region is concentrated in the town of Clendenin in Kanawha County and the town of Clay and the surrounding area in Clay County. More than 100 businesses have reported damage in Clendenin and the town of Clay reported at least 37 businesses were impacted by the flood. A private bridge was washed out in Elkview in Kanawha County, where the Crossing Mall Shopping Center remains closed. At least two of the major employers will not be reopening and more than 60 jobs will be lost.

Region 2 Economic Development District (Cabell, Lincoln, Logan, Mason, Mingo and Wayne)

The region consists of 2,566 square miles and has a population of 251,426 (2010). Coal, natural gas, lumber, light industry, agriculture, tourism and education are the major employers in this region. Flood damage in this region is concentrated in Lincoln County, which primarily sustained damage to public utilities and farmland.

Region 5 Economic Development District (Calhoun, Jackson, Pleasants, Ritchie, Roane, Tyler, Wirt, and Wood)

The region spans 2,699 square miles and has a population of 171,299 (2010). Oil, gas, sand, aluminum production, and polymer (chemical) production, agriculture and lumber constitute the major industries. The majority of the flood damage to this region affected public utilities and farms in Jackson and Roan Counties.

Region 7 Economic Development District (Barbour, Braxton, Gilmer, Lewis, Randolph, Tucker, and Upshur Counties)

The region consists of 3,496 square miles and has a population of 116,777 (2010). Oil, gas, lumber, and tourism comprise the major industries. Flooded farmland and infrastructure damage in Braxton, Gilmer, Lewis, Randolph, and Upshur Counties constituted the major damage in the region.

Economic Recovery Issues

PRE-EXISTING ECONOMIC CONDITIONS EXACERBATED BY FLOOD

The 12 counties that were the most heavily impacted by the flood also include some of the chronically distressed communities in West Virginia. A number of economic challenges, most particularly the downturn in the coal industry, have had a devastating impact on businesses and the workforce throughout the central and southeast regions. The eroding economic conditions have rippled throughout the communities and have threatened the capacity of businesses to rebound and the public institutions to manage overall flood recovery.

Over the last 24 months, the 12 declared counties collectively have a 7.0 percent unemployment rate, which is 1.54 points higher than the national average of 5.46. Two of the counties, Clay and Roane, have reported unemployment rates that are more than double the national average. Per capita income for the 12 counties is \$23,858 or 83.55 percent of the national average. Some of the hardest hit counties report even lower per capital income. For instance, Clay County has per capita income of as low as \$16,487 or just 57.7 percent of the national average.

The declining economies are considered to have considerably contributed to the loss of younger workers and therefore, the aging of the population. The average age of the residents in the most heavily impacted communities is 44.3 compared to the national average of 37.4. Nearly 30 percent of the population is over the age of 55. Four of the most heavily impacted counties also have experienced population growth well below the national average. The issue of out migration is compounded by the aging population.

Economic Distress Criteria—Primary Elements

	Region	U.S.	Threshold Calculations
24-month Average Unemployment Rate (BLS) period ending July 2016	6.82	5.28	1.54
2014 Per Capita Money Income (5-year ACS)	\$23,858	\$28,555	83.55%
2014 Per Capita Personal Income (BEA)	\$36,969	\$46,049	80.28%
2000 Per Capita Money Income (Decennial Census)	\$17,240	\$21,587	79.86%

Economic Distress Criteria—Geographic Components

	24 Month Unemp	Threshold Calculation	BEA PCPI	Threshold Calculation	Census PCMI (2000)	Threshold Calculation	ACS 5-Year PCMI	Threshold Calculation
Clay County, WV	10.89	5.61	\$27,555	59.8	\$12,021	55.7	\$16,487	57.7
Fayette County, WV	8.39	3.11	\$30,314	65.8	\$13,809	64	\$18,928	66.3
Greenbrier County, WV	6.25	0.97	\$34,966	75.9	\$16,247	75.3	\$22,913	80.2
Jackson County, WV	6.89	1.61	\$33,560	72.9	\$16,205	75.1	\$22,870	80.1
Kanawha County, WV	5.79	0.51	\$44,039	95.6	\$20,354	94.3	\$27,913	97.8
Lincoln County, WV	9.35	4.07	\$27,096	58.8	\$13,073	60.6	\$18,824	65.9
Monroe County, WV	5.31	0.03	\$28,577	62.1	\$17,435	80.8	\$20,041	70.2
Nicholas County, WV	8.95	3.67	\$32,557	70.7	\$15,207	70.4	\$22,674	79.4
Pocahontas County, WV	7.88	2.6	\$33,690	73.2	\$14,384	66.6	\$21,120	74
Roane County, WV	10.85	5.57	\$30,672	66.6	\$13,195	61.1	\$18,124	63.5
Summers County, WV	6.77	1.49	\$26,714	58	\$12,419	57.5	\$19,181	67.2
Webster County, WV	7.80	2.52	\$26,692	58	\$12,284	56.9	\$17,423	61

Sources: U.S. Bureaus of Census, Labor Statistics, and Economic Analysis; Calculations generated by StatsAmerica.

According to the West Virginia Coal Association, prior to the flood, mining production in the state was already down by 54 million tons and \$1.6 million have been lost in wages alone. In the 12 counties that had the most severe impact, more than 7,200 direct positions were lost according to the Workforce Adjustment and Retraining Notifications (WARN) issued over the past six years. Using the multiplier of 4.4 as prescribed by the U.S. Bureau of Economic Analysis, the loss of more than 7,000 direct jobs triggers the loss of many as 32,000 indirect jobs. The impact is further compounded by the lack of capacity at the state and local government levels to deal with this economic downturn. In July 2013, the state distributed \$8,607,916 in Coal Severance Tax, the amount of tax imposed on mining and processing coal, to all units of local government. The tax collection has declined more than 50 percent to \$4,461,671 in 2016.

Before the flood, the state was facing a \$250 million budget deficit, which the legislature addressed through numerous spending cuts in order to balance the 2017 budget. Because of the difficult budget challenges at the local and state levels, the West Virginia Department of Commerce and the EDDs are looking for resources to dedicate to recovery initiatives.

Communities throughout the impacted regions have traditionally depended on natural resource-based industries – particularly coal – as their primary economic driver and employer. The lack of economic diversification has been problematic and these communities have been struggling to “reinvent” themselves through the development of businesses in tourism, value-added wood products, agribusiness and manufacturing. Workforce West Virginia has focused resources on retraining dislocated coal industry workers through its “Displaced Worker” program. As of August 2016, 1,470 former coal industry workers have completed the training program but only 584 of them have found employment in other fields.

Most, if not all, of the counties in the heavily impacted areas have long struggled with a variety of major infrastructure challenges that have impeded economic growth and diversification. The lack of basic infrastructure in some communities and the deteriorated condition of much of the infrastructure that does exist, present significant challenges to flood recovery in general and economic revitalization in particular.

Numerous areas in the impacted area still do not have potable water or sanitary sewer service and those that do are struggling with the age and condition of the system. For example, the Richwood waste-water treatment plant was constructed in the 1960's and needs to be upgraded or replaced. White Sulfur Springs had an infiltration problem with its wastewater treatment plant prior to the flood that still needs to be addressed, the treatment plant is currently operating at 1.5 percent of its capacity.

High-speed broadband internet service, an infrastructure system considered essential to diversifying and growing local economies, is also not available in the impacted area with the exception of parts of Kanawha County.

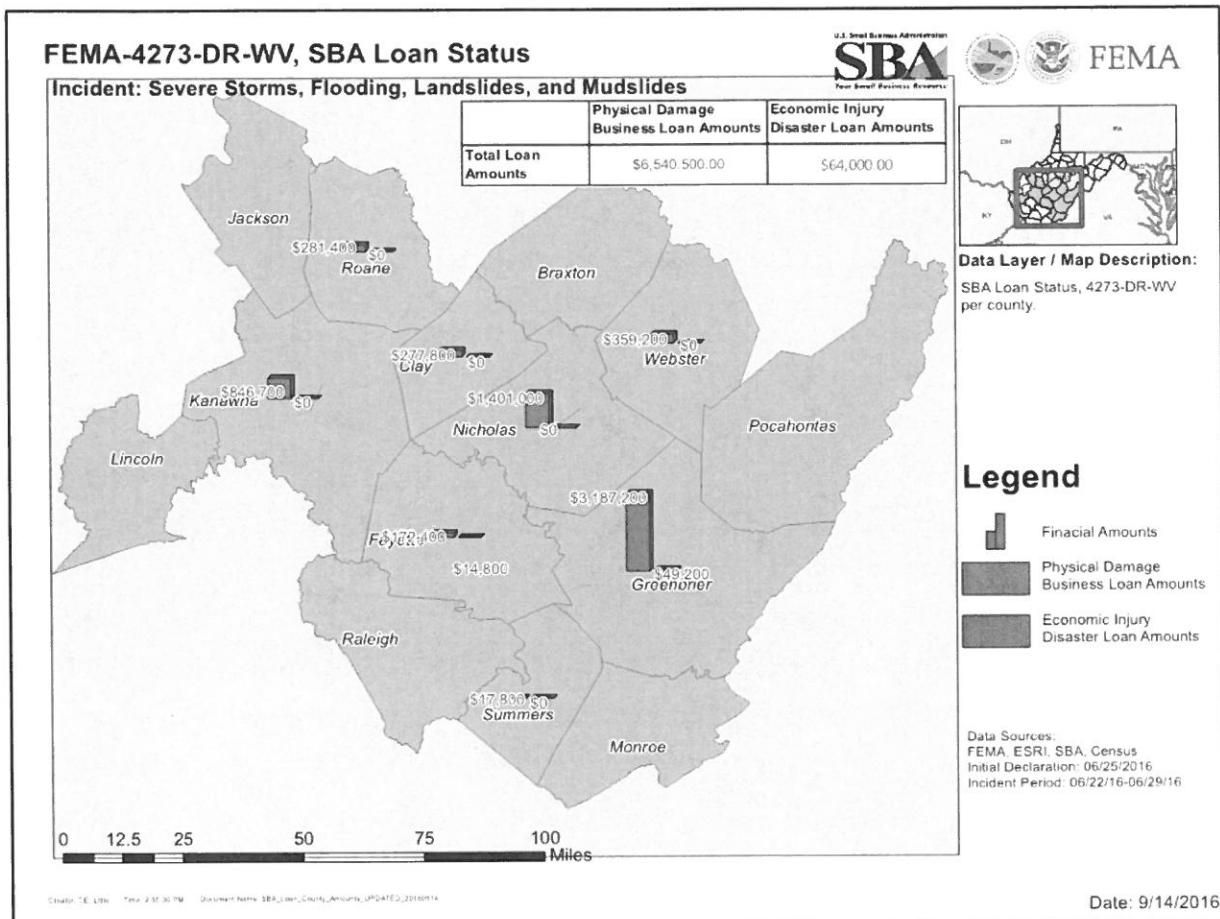
IMPACTED BUSINESSES AND CAPITAL NEEDS

The communities that sustained the heaviest flooding in June continue to wrestle with the direct and indirect economic impacts imposed by damaged infrastructure systems, negative publicity related to tourism attractions and a lack of capacity to pay for or manage flood recovery. In addition, there is still much work to be done to address the needs of individual businesses that sustained direct losses from damage to facilities, lost inventory and customers.

While the Greenbrier Resort, Greenbrier County's largest employer, was temporarily closed because of heavy flooding, the flooding did not significantly impact most other large employers. Dozens of small businesses, primarily retailers and service providers, were destroyed or damaged and their owners are still reeling from the effects of the flooding and the loss of assets and revenue associated with the damage.

The SBA offers the primary federal assistance to individual businesses through two types of disaster loans. One disaster loan program assists businesses in addressing physical damage, including replacing facilities, inventory and other lost property. The SBA also offers businesses "economic injury" loans for those who have lost revenue or customers, regardless of physical damage to their properties.

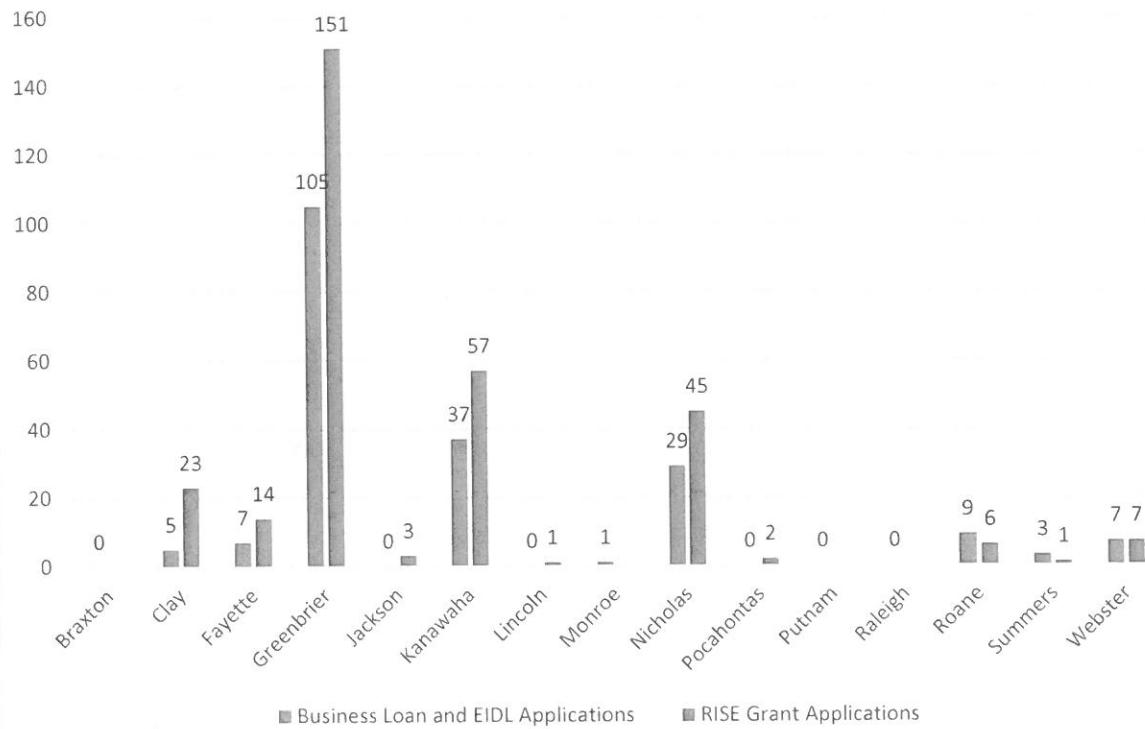
As of September 15, SBA has approved 63 of 150 loan applications it received for physical damage, for more than \$6.5 million. As of early September, only eight applications for economic injury disaster loans have been submitted to SBA and two of those have been approved for a total amount of \$64,000.



Recognizing the capital needs of affected businesses, the state collaborated with the West Virginia Chamber of Commerce to create RISE West Virginia in response to critical business needs resulting from the floods. The public-private grant program provides assistance for small businesses that were operational before the flooding and are working to reopen while struggling with existing debt and limited resources. The program has drawn funds from the state and private donors.

As of early September, a total of 310 businesses had applied for RISE grants, with 151 of those applicants doing business in hardest hit Greenbrier County. A total of \$426,900 in grants have been distributed to businesses. Although the state continues to seek more funding, initial public and private funding amounted to \$2 million. In order to apply for RISE funding, a business not only has to demonstrate it was an operating business in one of the 12 most impacted counties, but it must also have a plan to continue operations and to reopen, if the business is currently closed.

Assistance Requests



In order to illustrate the degree of economic damage, the Economic RSF has developed the matrix shown on page 24 that includes data reflecting the current status of federal and state business assistance programs, the number of major infrastructure projects and the number of businesses that have reported losses due to the June flood. As is evident in the matrix, communities in each of the 12 counties sustained significant damage to their commercial centers and the underlying infrastructure that serves them. The “cumulative score” reflects the level of damage recorded to date and does not indicate any prioritization of assistance that may be needed in any community. The Economic RSF will continue to conduct data collection and interviews with local and regional economic developers and other leaders to better understand the direct and indirect flood damage to businesses and community economies.

County	Unemployment Rate 2016	RISE Grant \$	RISE Grant #	Damaged Central Bus. Districts*	Approved SBA Business Loans	Disaster Unemployment Assistance	Large PA Projects**	Cumulative Score
Greenbrier	4.5	\$219,900	151	125	\$3,236,400	\$23,324	7	23
Nicholas	8.4	\$65,00	45	33	\$1,401,000	\$6,477	5	21
Kanawha	5.1	\$82,000	57	100	\$843,700	\$15,891	13	20
Clay	9.9	\$ -	23	45	\$277,800	\$11,022	0	14
Webster	8.9	\$10,000	7	6	\$359,200	\$ -	3	12
Roane	9.4	\$30,000	6	0	\$281,400	\$3,292	0	10
Fayette	7.4	\$10,000	14	0	\$187,200	\$3,816	1	10
Lincoln	8.1	\$ -	1	0	\$ -	\$ -	1	6
Summers	5.5	\$ -	1	0	\$17,800	\$ -	3	5
Monroe	4.0	\$ -	0	0	\$ -	\$ -	1	3
Jackson	6.0	\$ -	3	0	\$ -	\$ -	0	3
Pocahontas	4.5	\$10,000	2	0	\$ -	\$ -	0	3
average	7.0	\$18,818	14.45	16.73	\$306,191	\$3,682	2.09	9.73
stand. dev.	2.1	\$28,729	19.50	31.74	\$443,181	\$5,406	3.62	6.54

*Based on # of businesses reported destroyed or damaged

**Does not include debris removal

BUSINESS RECOVERY AND PREPAREDNESS

Small businesses, particularly “mom and pop” retailers that composed the majority of businesses in the rural communities most affected by the flood, commonly face numerous challenges related to limited resources, lack of business planning and market challenges often beyond their control. A flood or any major economic disruption can often be the tipping point that puts them out of business.

Economic development stakeholders have observed that many of the small businesses in affected communities did not have continuity plans, capital savings, or other resources needed to manage their own recovery. Many of them also are dealing with compounded impacts, as they were already exploring their options due to the loss of customers, decreasing workforce, and lack of capital access imposed by the decline of the coal industry and other traditional economic drivers in their regions.

All of these individual and market factors can present barriers for businesses trying to obtain recovery assistance that is offered. Economic developers have noted that paperwork involved can be daunting and the recovery process confusing. In addition to the difficulties of managing their own personal and business recovery, they also must deal with the uncertainties created by the long-term recovery unknowns as communities deal with the pre-existing economic downturn and long-term flood recovery.